The Magazine For Hewlett-Packard Enterprise Computing

HP Professional

OCTOBER 1997

HP-UX

◆

Windows NT

◆

MPE/iX

A Cardinal Publication

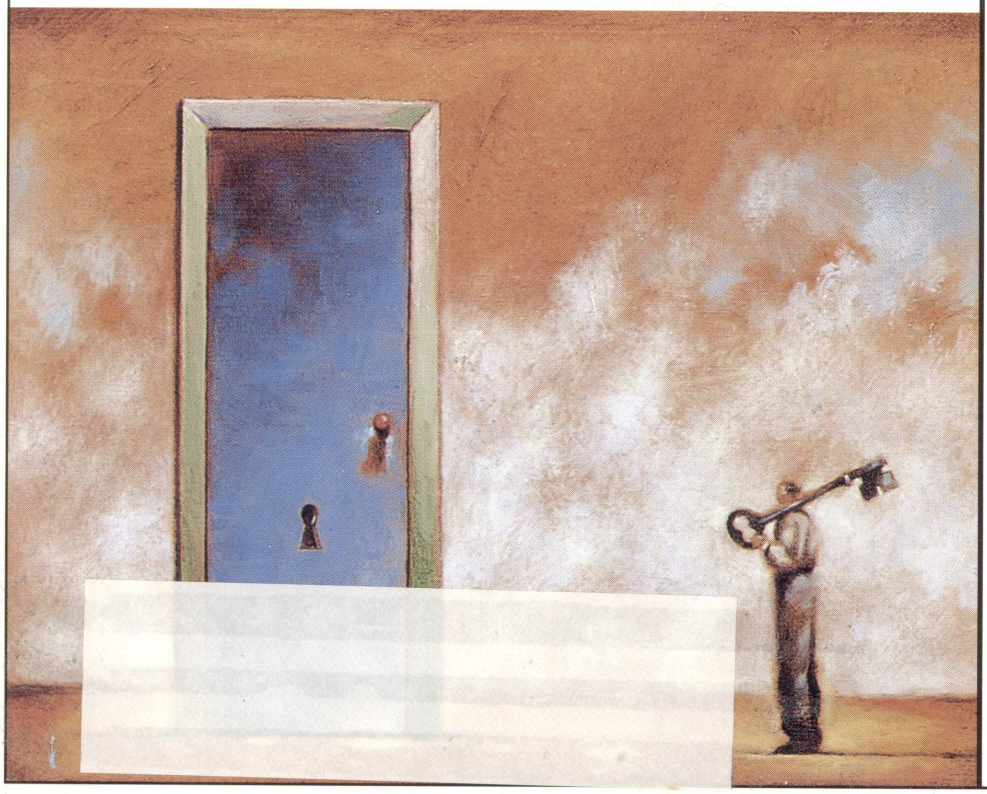
APPLICATION DEVELOPMENT ENVIRONMENTS

Objects, Components And Microsoft. Oh, My!

Microsoft's DCOM and Sun's Java RMI are vying to unseat OMG's CORBA in the Distributed Computing Environment. And if you find the right keys, you'll be on the threshold of a new dimension in software development. **PAGE 16**

Lock Out Bugs With Process Configuration Management

Poorly designed software can cause customers to complain or even hit you with lawsuits. With process configuration management, you can lock out software bugs. **PAGE 26**



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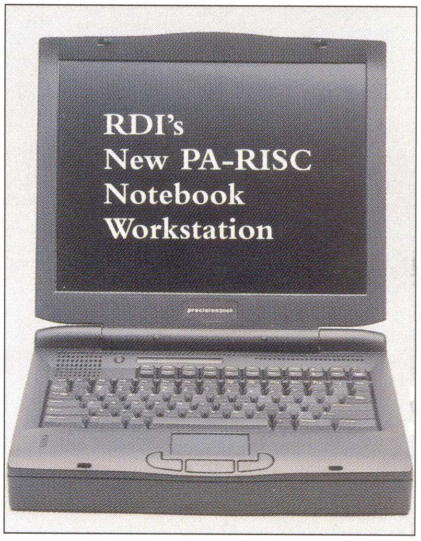

- HP-UX 11.0 Arrives
- HP KAYAK PCs Paddle Upstream
- HP's D-Classy Additions

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- ATTO Technology Inc.'s AccelNet Ultra

NEW COLUMN

Now Doing Windows (NT) **PAGE 36**

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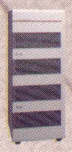

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By Frank Teti

In the middleware election, the Distributed Computing Environment (DCE) is trailing the new age leaders. While CORBA remains the other main contender, Microsoft's DCOM and Sun's Java RMI are vying for your vote. You can listen to the propaganda or get the full scoop from our expert.

What's Buggin' You? 26

By Tani Haque

No company wants to have to recall defective software products. Process configuration management automates and manages software changes throughout the development lifecycle and produces healthy software via the integration of process management, version control and change management.

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AT PRESS: New HP Domain Internet Bundles Are Ready To Serve and HP Delivers A Process Plan For IT; HP fills the gap with RDI's PrecisionBook; HP 3000 on the Web with Netscape's FastTrack Server; HP and SAP announce SAP Ready-to-Run R/3 on NetServers; 64-bit HP-UX 11.0 now available; New HP Kayak PC Workstations; and Two new D-class servers.

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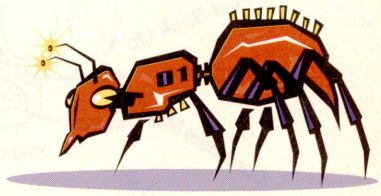

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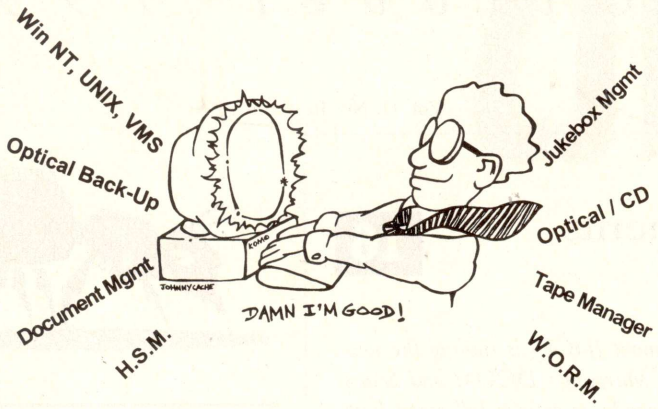

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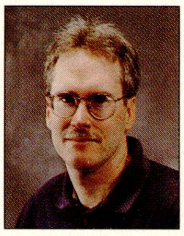
When Worlds Collide



George A. Thompson
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When Worlds Collide could have been the theme for this year's HP World in Chicago. With Microsoft and Oracle sponsoring the show along with HP, it's clear that HP's world is expanding. For additional evidence, I refer you to the well-delivered and informative keynote titled "Creating the Extended Enterprise" of Rick Belluzzo, executive vice president and general manager of HP's Computer Organization. And for good measure, Robert McDowell, vice president for Microsoft's Enterprise Business Relationships, and Jim Louderback, editorial director for *PC Week,* also took keynote turns. Whether you conscientiously caught them all or spent your days catching some rays while sitting around on the Navy Pier, you can't possibly miss the Jupiter-size moon called Microsoft hurtling toward your data center.

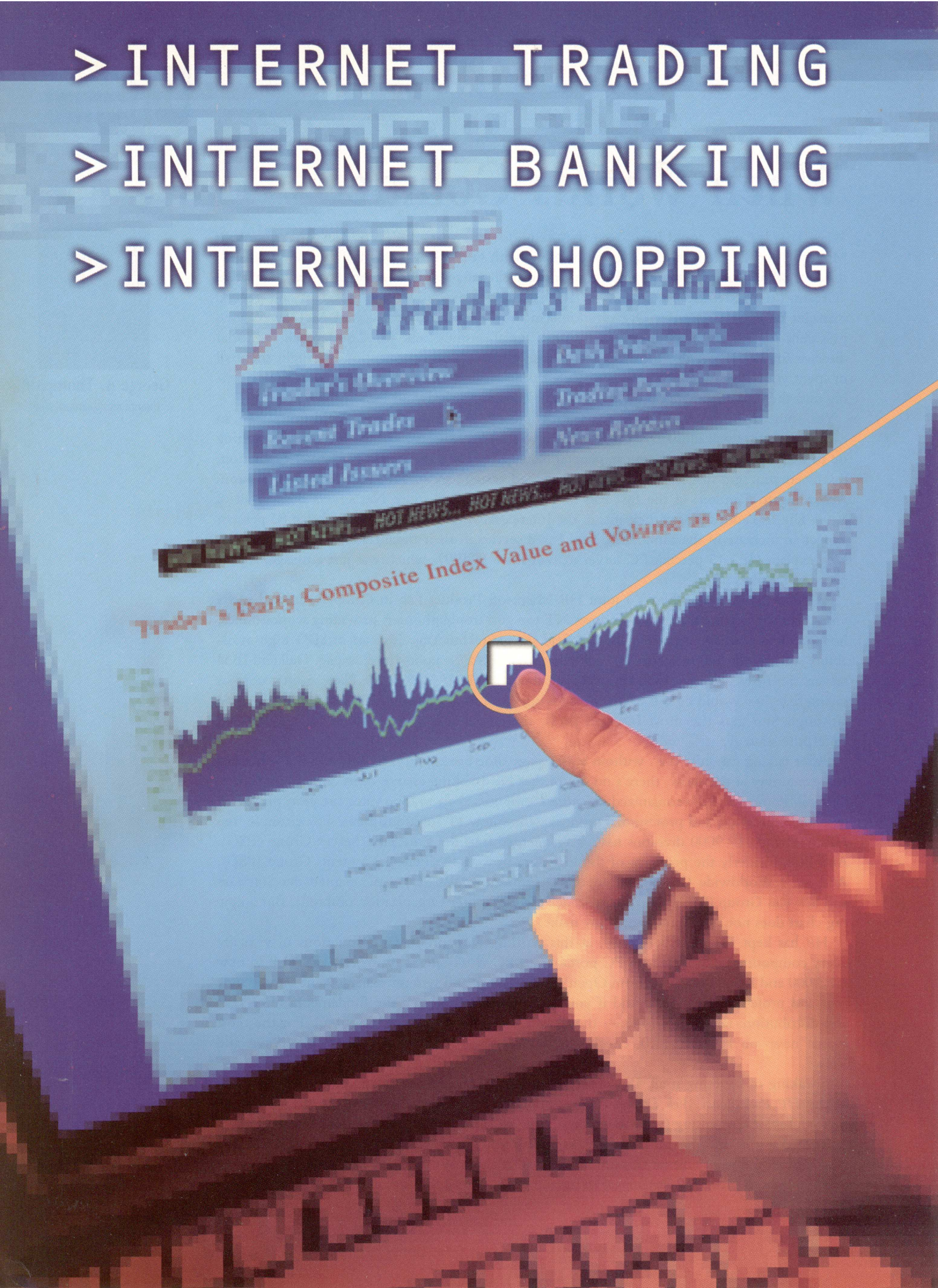
Yes, some skeptics see HP's alliance with Microsoft as no more than a "cold fusion" — an earnest ploy that will ultimately prove to be a hoax. Nevertheless, HP has been busy warming up to the challenge. Maria Cannon, general manager of HP's Enterprise NetServer Operation, discussed strategic directions of Intel x86-based servers in an HP World plenary session. According to Cannon, in the first half of 1997, HP shipped more NetServers than in all of 1996. She also added that participants in the Interex Advocacy survey indicated that 83 percent expect an increase in the number of Intel-based servers in their organizations. That could also help explain HP's 13 percent PC server market share in 1997, which was just a meager 4 percent several years prior.

Beyond the statistics, there's a joint HP/Microsoft Product Lab in Camp Redmond and a virtual lab with direct access to Windows NT top gun troubleshooters providing workarounds, hot fixes and permanent patches for HP field service technicians. It's part of HP's high-availability strategy for NT in which HP will also provide 24x7 support for Compaq, Dell and IBM servers. So now you may be asking, "What about UNIX?" Well, Lew Platt, is on record as saying that "we would be out of our ever loving mind to abandon UNIX." Enough said. And although Sun gets the most Internet press, the Internet is a big part in HP's Extended Enterprise strategy.

After talking candidly (i.e., without a 40+ page slide presentation in sight) with a variety of HP executives at the show, there's no doubt that HP is taking charge of its computing future. Did you know that HP reorganized its entire Computer Organization since last year, providing its people, products and professional services with a new IT solutions focus? For example, the HP 3000 and HP 9000 divisions have been merged into the Enterprise Server Group (ESG). And PCs, formerly the province of the PPG, are now in the Personal Systems Group (PSG). And HP's Worldwide Customer Support Organization (WCSO) was renamed the Software and Services Group (SSG). And all are under the Computer Organization umbrella. But a new org chart does not a computer company make.

HP has kept the press very busy, at this writing, with product introductions in virtually every computing category. From PC portables to PC workstations, from HP-UX 11.0 to new HP 9000 and Domain servers, from OpenView network and systems management to new support and professional services. And if you think HP has forgotten the fundamentals like sales and distribution: take it from me — they haven't. And we'll be covering it all. For the most recent news on HP-UX 11.0, check out our renamed Industry Watch — HP News and Views.

Speaking of covering it all, I'm proud to announce the official redesign and redeployment of the *HP Professional Web Edition* (www.hppro.com), our own humble web site. With the help of Taylor Consulting (www.taylorconsulting.com), we, like many of our IT readers, have catapulted out of the learning curve. I'm confident you'll appreciate the new look and features. Also new in the print edition this month is Ryan Maley's Windows NT column. It's just part of our efforts to make *HP Professional* an instrumental IT tool for our audience.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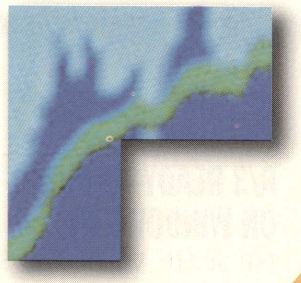

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HP NEWS & VIEWS

If you didn't think anything was new at HP World, you didn't see RDI's (Carlsbad, Calif.) notebook-size, 7.5-pound PrecisionBook ($11,995), a 132MHz or 166MHz PA-7300LC-based portable workstation. Besides the B-class PA-RISC CPU, the Precisionbook has a lot going for it: 512MB RAM, expandable to 32MB; 64KB data and instruction caches, with a 1MB optional secondary cache; up to three removable (3GB) hard drives (9GB total); HP Visualize-EG graphics capability; and a 14.1 XGA active matrix display. Compatible with HP-UX 10.20, performance ranges from 7.56 to 7.75 SPECint95 and 5.91 to 6.23 SPECfp95, depending on CPU speed.

HP 3000'S FASTTRACK TO THE WEB

The biggest news at HP World for HP 3000 users was the announcement that starting in 1998, Netscape's FastTrack Server would run on the HP 3000 platform. Netscape FastTrack Server is a Web server engine supporting HTTP 1.1 and LDAP directory services. Based on the same architecture as Netscape Enterprise Server, Netscape FastTrack Server also includes support for Java, JavaScript, and database connectivity and session management services.

FastTrack Server is HP's replacement for OpenMarket Inc.'s Secure Web Server that was originally announced for the HP 3000. When Open Market changed its strategy, current customers were given support, but left without an option.

R/3 READY-TO-RUN ON WINDOWS NT

HP at HP World and SAP at SAPPHIRE '97 (SAP's North American user conference) announced an integrated package of HP hardware and services for SAP Ready-to-Run R/3, a Windows NT-based initiative from

AT PRESS

Less Pain In Your Domain

In late September, HP announced several pre-packaged, ready-to-run, Internet solutions running on both its HP-UX and Windows NT platforms. The new HP Domain solutions include integrated hardware and software focused on key Internet and intranet business needs: Domain (Web) Publishing (HP-UX and NT); Domain Messaging and Publishing (HP-UX and NT); Domain Collaboration (HP-UX and NT); and Domain XE Information Repository (HP 9000 Model K460 and HP-UX only). Prices start at $10,500 for the Publishing server (100 users), $15,400 for the Messaging and Publishing server (100 users), $16,900 for the Collaboration server (100 users) and $140,000 for the HP Domain XE Information Repository (unlimited users).

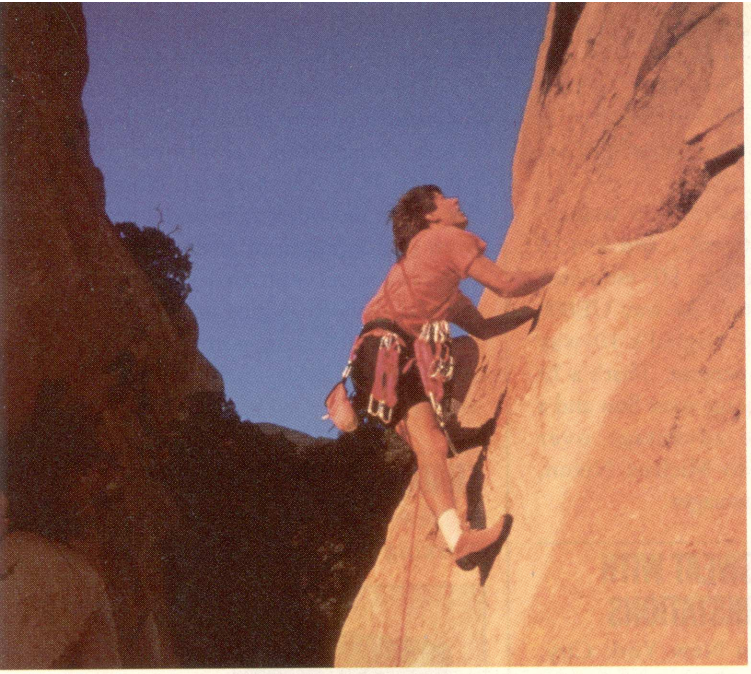
According to HP, each Domain package respectively provides the following Internet and intranet solutions: turnkey Web site (in a day); creating and managing virtual team design with Web and mail software; Web content management; and the rapid implementation of new business applications. The software packages include combinations of HP Domain Management and Check Point firewall and Java software, Netscape Enterprise Server, Netscape Messaging Server, Netscape Collabra Server, and Informix Universal Server and Universal WebConnect.

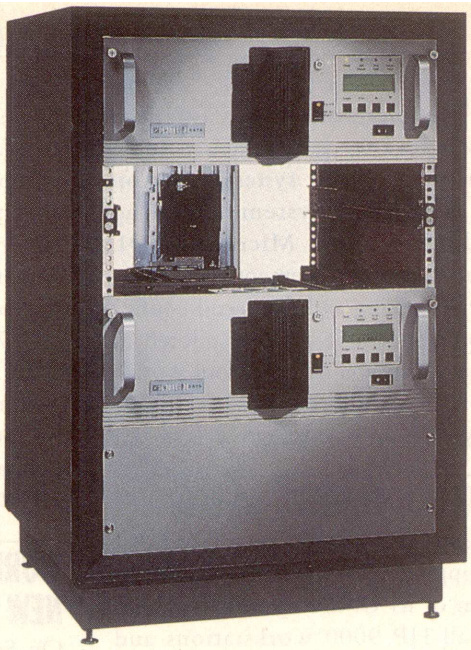
High-availability packages also are available for all the Domain packages. At the same time, HP announced new services and partners to support the new Domain packages. According to the Yankee Group (Boston, Mass.), HP's solutions are "well thought out ... giving HP a very compelling infrastructure to address the overall 'Net business-to-business marketplace."

It's The Process, Not The Data

Throw out those old data-centric IT ideas. HP has a new one embedded in its new *IT Service Management Reference Model.* It's based on the IT Infrastructure (ITIL), an extensive library of books reflecting best practices on IT service management. More familiar in Europe through the IT Service Management Forum, HP is attempting to export the ITIL to the United States by becoming one of the first sponsors in a newly opened American branch.

By standardizing on a framework (from a prototype developed by HP's Professional Services Organization), HP plans to help IT managers develop a "process-orientation" around IT services. With common terminology, and configuration and change management at the core of the reference model, HP is bringing the resources of its newly formed Software and Services Group (including OpenView) to the IT table.





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SAP. The integrated package includes a full SAP R/3 production system and a complementary test system, both on HP NetServer systems running Windows NT and Microsoft SQL Server, system management tools, standard networking and front-end configuration options. It is being piloted in Germany and will be rolled out worldwide in conjunction with SAP's Ready-to-Run R/3 initiative.

HP-UX 11.0 REACHES 64-BITS

On September 16, HP announced that it's shipping HP-UX 11.0, the 64-bit version of its UNIX operating system, with all HP 9000 workstations and servers. HP-UX 11.0 is binary compatible with 9.x or 10.x fully-bound applications. There are no forced recodes or recompiles.

HP-UX users should also note that there are two versions of HP-UX 11.0: the 64-bit version for all CPUs within HP's PA-8000 Series; and a 32-bit version that will run on PA-7000 CPUs. With the exception of the Very Large Memory (VLM) capability, the two versions are identical. That means 32- and 64-bit applications can interoperate and talk to each other running side-by-side.

Other highlights include:

64-bit Veritas File System — (a.k.a. the Journaled File System or JFS) provides high throughput for large amounts of data and fast recovery after system crashes.

Ignite/UX — a new feature, which captures a single "golden image" of an entire configuration to deploy hundreds of servers.

Software Distributor/UX — a POSIX 1387.2-compliant tool for distributing applications.

Other improvements include a Java-enabled System Administration Manager (SAM) for Web browser management and bundled HP OpenView-Ready and CA TNG Frameworks.

HP-UX 11.0 AND V-CLASS ON TOP OF THE TCP-C HEAP

According to new TPC-C results, the HP-UX 11.0 OS running on an HP 9000 V2200 system (with 16 PA-8200 CPUs with 16GB of RAM) with a Sybase Adaptive Server Enterprise database delivered the fastest TPC-C numbers to date.

The raw numbers: 39,469 transactions per minute (tpmC) and $94.15 per tmpC. According to HP estimates, that outperforms Sun's 24-way UE600 by 27 percent and Digital's 10-way DEC 8400 by 178 percent. That's a 13 percent price advantage over Sun and a 50 percent price advantage over Digital, according to Michael Nixon, HP 9000 product manager.

WORKING UP A SWEAT WITH NEW HP PC WORKSTATIONS

On September 9 in New York City, HP announced several sweeping strategic initiatives and for good measure threw in two new commercial Wintel PC brands. The first — HP Brio — specifically designed for small business customers will be introduced this month. The second — HP Kayak — is a high performance system for technical workstation users.

Both brands, according to Jacques Clay, vice president and general manager of HP's commercial PC business, were spun off of HP's corporate Vectra brand of PCs. The three HP Kayak models — XA ($2,250), XU ($13,500) and XW ($8,379) — strike at the red hot PC Workstation market.

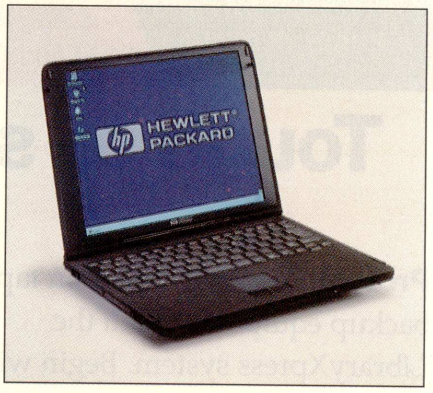
Some high-end PC configurations have been sold into application areas traditionally considered the domain of RISC/UNIX workstation vendors, according to Peter Ffoulkes, director and principal analyst for Dataquest. In the first quarter, HP led all vendors in the Windows NT workstation market.

TOP OF THE TOOLS TO YA

HP also announced HP TopTools, a Web browser-based management software application that manages multiple standards-based PC devices, allows access from multiple operating systems and plugs into leading network management systems. Expanding on the HP TopTools PC management software for HP Vectra PCs and HP Kayak PC Workstations, the new browser-based management application enables configuration, administration and monitoring of NetServer systems, OmniBook notebook PCs, palmtop PCs, AdvanceStack Hubs and Switches, and other networked devices from one application. It also continues to manage all standards-based networked devices — not just HP products — as well as support device management standards, such as DMI and SNMP.

SHADES OF THE DYNABOOK

In New York City, HP demonstrated a working prototype of the thinnest,



lightest PC notebook. Using Intel's newest 200MHz and 233MHz Mobile Pentium CPUs, the 3.1-pound notebook is less than three-quarters of an inch thick and has a 12.1-inch TFT display. The new notebook is expected to be available in January 1998.

NEW D-CLASS MODELS

HP announced two new models in the HP 9000 D-class Enterprise Server series — the D380 and D280. With 64MB of memory and 2GB of disk storage, the D280 starts at $25,450 and the D380 starts at $30,490.

The D280 and D380 use HP's 180MHz 64-bit PA-8000 CPU. The D380 and D280 servers support up to 3GB of memory with the new 512MB module, 2MB cache up to 9.5TB disk storage, and are available with one or two CPUs. The D280 offers five I/O expansion slots and two disk bays, and the D380 provides eight I/O expansion slots and five internal hot-plug Fast/Wide SCSI-2 disk bays. And, a new 1.6m cabinet enables racking of up to four D-class servers in one cabinet.

```
corp:/acctg >ls general.ledger
UX:ls: ERROR: Cannot access general.ledger:
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corp:/acctg >ls payroll.1qtr
UX:ls: ERROR: Cannot access payroll.1qtr:
No such file or directory

corp:/mfg >ls inventory.cont
UX:ls: ERROR: Cannot access inventory.cont:
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corp:/mfg >ls order.entry
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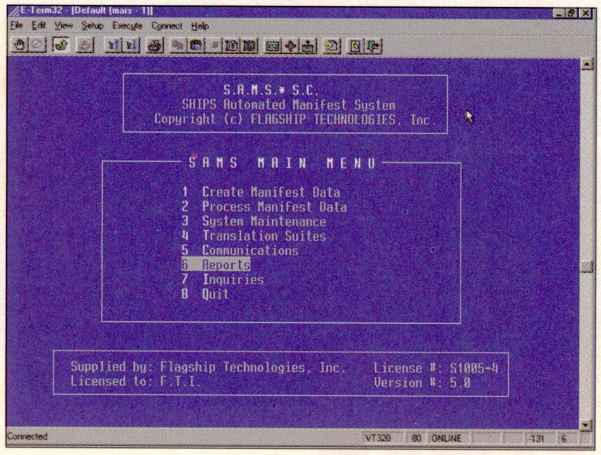

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CIRCLE 353 ON READER CARD

Since 1983, DCSi (Boulder, Colo.) has developed and marketed PC connectivity software. The company specializes in DEC VT and SCO ANSI text and graphics emulation for 16- and 32-bit Windows platforms. Its most recent addition is E-Term32 version 1.0, a 32-bit VT320, SCO ANSI terminal emulation/connectivity software for Windows 95 and Windows NT 4.0. E-Term32 includes a full-featured ftp client along with ping, traceroute, finger, whois and NS Lookup utilities.

The product offers the following connection options: direct serial up to 115,200 baud, TAPI modem support, TCP/IP using WinSock, and LAT using an optional poly/Net 32-bit LAT stack. E-Term32 works over Microsoft's multithreaded TCP/IP stack for Windows 95 and Windows NT 4.0. The Session Manager enables creation and modification of named sessions, including associated terminal setting for all connection types. It provides unique sessions to connect to a variety of hosts. Multiple connections to the same host display a unique session number.

Up to six emulation toolbar groups display on the screen in any desired combination and sequence. Either floating or docked toolbar behavior may be selected. Keys may be mapped to strings, DEC VT keys, escape sequences or command files. Keymaps are supplied that mimic either a standard DEC VT or an IBM Enhanced PC keyboard.

A DCL-like scripting language enables automation of login and file transfer tasks. In conjunction with the product's support for DDE client-server, the scripting language can be used for other application communications. E-Term32 includes built-in Kermit, XMODEM, YMODEM and ZMODEM protocols, enabling file transfers over serial or networked connections. The setup options control size, page positioning and orientation of printed host reports.

According to Nadir Kamal, senior systems engineer at Elite Information Systems (Los Angeles, Calif.), a legal billing and accouting software company, the ability of its clients to access 132-column reports on their 80-column screens without wrap-around was a major selling point of E-Term32. "They were able to get to their wide reports in a compressed format," says Kamal, "without the need for additional hardware drivers or the need to switch their graphics cards."

In addition, E-Term32 offers a number of visual controls including color mapped video attributes, double height/double width characters, variable screen length from 24 to 48 lines, ANSI color support, and autosizing Digital and PC font support. The Maximize Workspace mode hides menu bars, toolbars and status line, allowing the entire application window to be used for viewing data.

E-Term32 costs $179 per single copy, or $129 per copy for a five-pack. Site licensing starts at $1,190 for 10 copies. A 100-copy site license is $8,900.

—Matt Hengey,
Contributing Author

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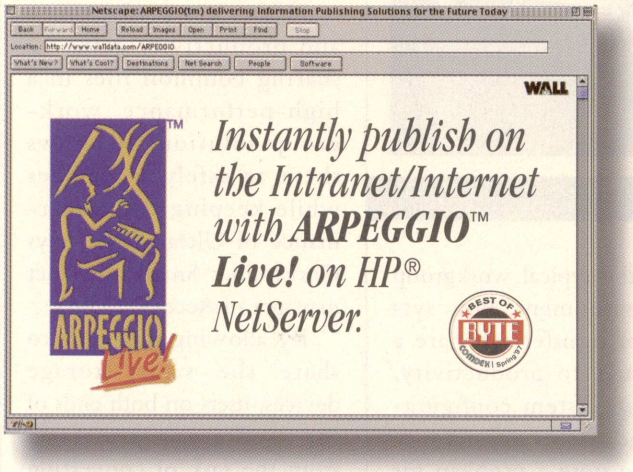

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In the typical workgroup environment, slow system transfer rates are a hindrance to productivity. Cabling, system configuration and system maintenance can also pose a problem for workgroups.

Therefore, ATTO Technology (Amherst, N.Y.) developed AccelNet Ultra to meet all the needs of digital video, pre-press and workgroup environments. Based on AccelNet, which used Fast/Wide SCSI 2, AccelNet Ultra uses Fast/Wide SCSI 3 (Ultra SCSI). With AccelNet Ultra, several hosts can share data on the same storage system.

AccelNet Ultra is a high-performance SCSI-based file sharing device that allows users to securely share files, facilitating an increase in the productivity and efficiency of workgroup environments. With its Ultra SCSI speeds, AccelNet Ultra provides the fast transfer of data between workstations.

"Users get performance and productivity gains by sharing common files in a high-performance workgroup solution. It allows them to safely share files while keeping the performance of Ultra SCSI," says Christopher Smyth, product manager of AccelNet Ultra.

By allowing members to share the same storage devices, users on both ends of the workgroup are saved from the task of converting and transferring files. And by sharing the same gigabytes of storage, workgroups can considerably cut storage costs.

AccelNet Ultra also can serve the same storage function that removable hard drive systems do for pre-press environments. With AccelNet Ultra, you have one permanent storage facility that everyone shares, saving the high cost of removable hard drive tower stations.

AccelNet Ultra includes a host isolation switch that allows the host modules to be isolated from the SCSI bus for the ease of shutdown, removal and replacement. In many systems, when problems occur within one of the host systems, repair can result in the entire system being shut down. Using the host isolation switch, users can take the host offline without disturbing the remaining system, while easily reconnecting with a flip of the switch.

One of the greatest benefits of AccelNet Ultra is its data transfer rate. By using the Fast/Wide SCSI 3, users get a data transfer rate of 40MBps. Additional performance features include: easy configuration; asynchronous and synchronous data transfers; hot swappable host modules; scalability to 15 hosts; LED status indicators; support for single-ended and differential (optional) devices; fault isolation capabilities; support of differential and single-ended device connections; and stackable, connectable units.

AccelNet Ultra is priced at $7,495 for a four-host unit, which includes the AccelNet Ultra enclosure and four host modules.

—Rebekah Robertson, Contributing Author

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Open The Door To Components NOT Objects

FRANK TETI

Many say the Distributed Computing Environment (DCE) is the only middleware environment dependable enough for distributed computing.

The arguments are as political as they are technological. And as in any political debate, there's no shortage of propaganda. Although DCE was the primary contender, Microsoft's DCOM (Distributed Common Object Model) and Sun's (Mountain View, Calif.) Java RMI (Remote Method Invocation) are vying to unseat CORBA.

CORBA is a broad, expansive, incomplete specification, while DCE has been implementable in its current form for some time. DCOM is an NT solution, just now being ported to more robust environments. For organizations trying to hedge their distributed strategies by considering Microsoft on the desktop and CORBA on the server, this seems like planned mangleware at best.

Historically, the communication infrastructure for distributed applications has been home-grown and "close to the metal," using low-level interprocess communication primitives, that is, shared memory, pipes, sockets, and even data files and remote procedure calls (RPC). That's why DCE, a truly arcane environment, was of commercial interest at all.

Today, IBM (Armonk, N.Y.) and other vendors, such as Transarc (Pittsburgh, Pa.) and Magna Software Corp. (New York, N.Y.), are providing starter kits and other support that make the technology easier to work with. Albeit, this support might be too little, too late.

DCE, although mature, is a complex and expensive infrastructure and it has its limitations: it's RPC-based. RPCs work well for small applications where asynchronous operations are not required and communication is one-to-one. Some analysts believe that RPCs, because of their synchronous nature are not good frameworks for enterprisewide applications where high performance and high reliability are needed. Note: asynchronous RPCs are supported using DCE threads.

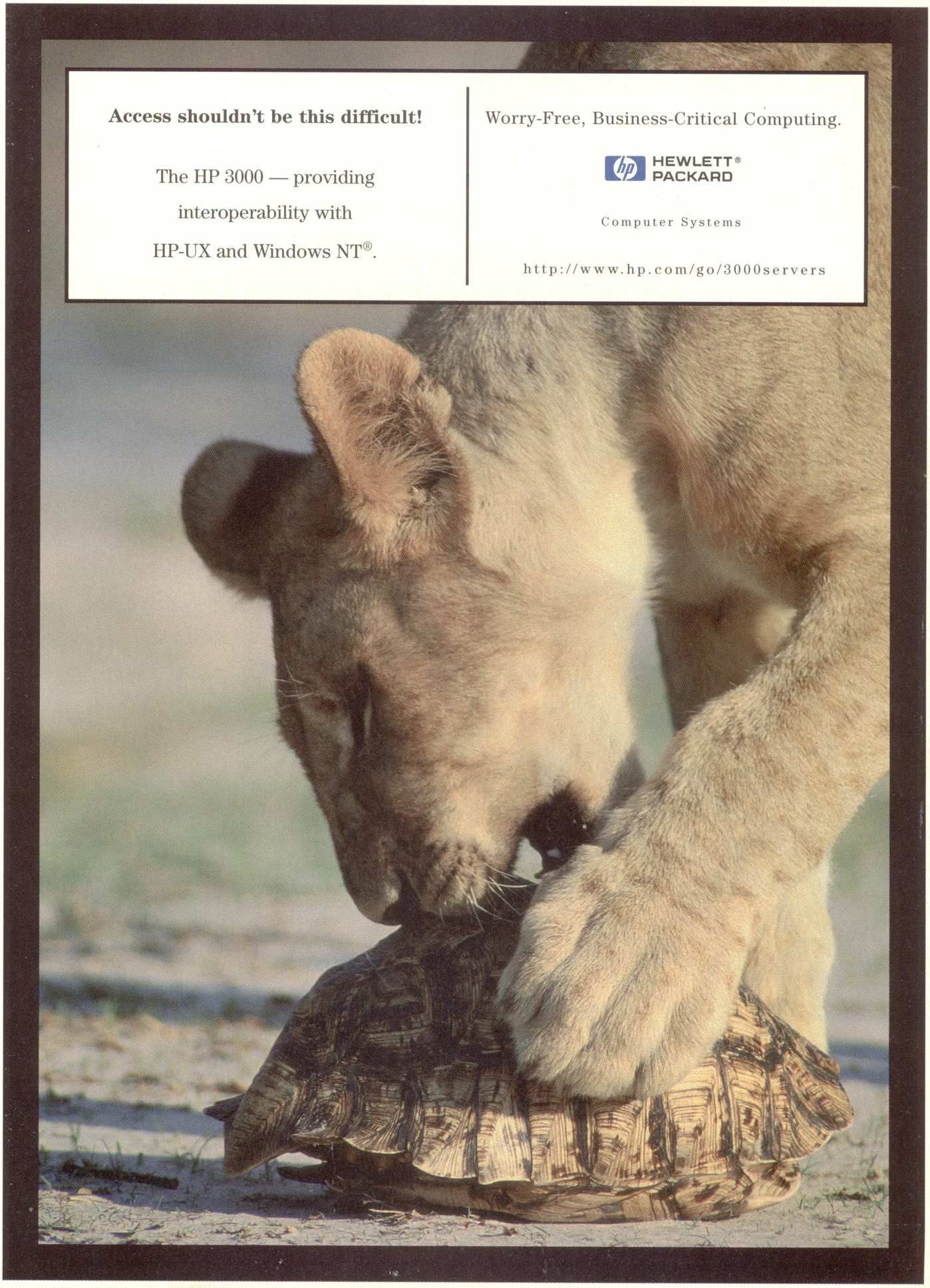
Additionally, tests of network data throughput are dwarfed by performance hits when marshaling RPCs. These limitations need to be designed for in a DCE/Encina environment. Large monolithic servers are evil: applications need be broken into many servers that have many interfaces and methods grouped by transaction type — essentially, a modular approach.

RPC standards have not progressed over the past five years because of the emergence of ORBs (Object Request Brokers). The current alternatives to DCE, CORBA and DCOM, are specifications, not out-of-the-box implementations like DCE. CORBA 2.0 is specified top-down, whereas DCOM is specified bottom-up and is component-centric.

The main differences are in the communication model, the inheritance model (DCE is RPC- and C-based) and in binary reuse (CORBA has code reuse, not object reuse). Still, some say DCE is their best bet for combining disparate elements of their computer systems, especially those networks where object-oriented (OO) programming isn't an option. The internals of a DCE server can be fully OO, even using the Object Management Group's (OMG) transactional C++.

Externally, DCOM is similar to DCE, but CORBA follows an OO model. CORBA uses a true object ID and unique Object Reference for interface discovery, while external references within DCOM use a global-unique ID (GUID) and the DCE algorithm. Either way, the systems are not passing objects around the network; in DCE client-server-to-server environments, you want to pass parameters and large data sets using DCE conformant arrays (i.e., an allocated array of structures that can be sent over the wire) via the interface definition language (IDL).

The area of unique interface definitions, which is a fundamental feature of CORBA, DCOM and DCE, is a weak-



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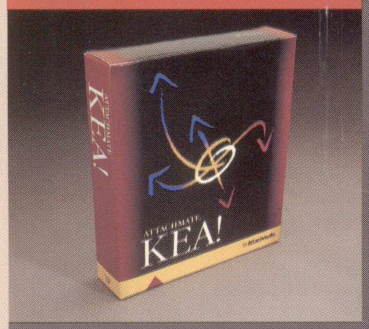

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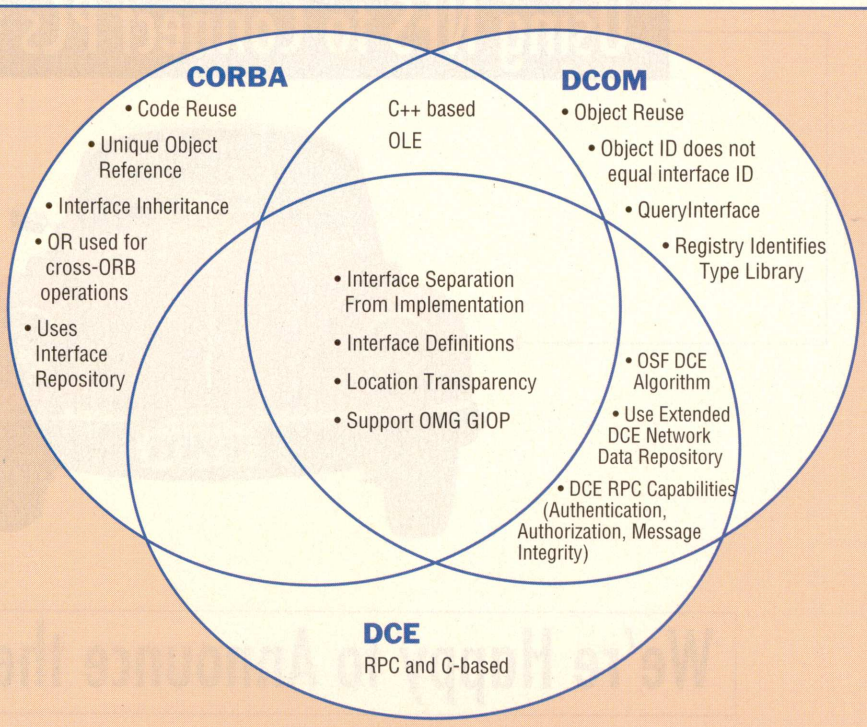
ness as compared to message-oriented middleware that can take advantage of self-describing messages. Conversely, ORBs and DCE/Encina servers must know in advance how to access and decode incoming information.

Implementing C++ constructs like exception handling is not straightforward in a DCE/Encina environment. There is no true concept of an external or globally shared exception. If used by an interface, an external exception must be defined in its IDL. Objects that throw exceptions must scope the exception (i.e., throw interfacename:: myevilexception();) within the context of an interface. This is cumbersome when, on a server, you have many interfaces defined that share an object that throws exceptions.

Encina 2.5 supposedly resolves that feature. The real solution is to use exceptions sparingly. Additionally, stack unwinding after an exception is thrown can put database connections in inconsistent states if they are not caught properly. Encina exceptions are more like enumerated types and do not support dynamic text strings. Encina relies on the XA interface for RDBMS integration. At the same time, there is a lack of ISV integration tools for XA.

Persistence Software (San Mateo, Calif.) supports XA and offers object-to-relational mapping. Rogue Wave, the de facto, two-tiered database integration standard is reportedly soon to have XA-compliant software for Oracle (Redwood Shores, Calif.) and Sybase (Emeryville, Calif.). Building resource and connection managers is not trivial, but this vendor's legendary C++ staff probably has a good chance of implementing a useful solution. In reality, most organizations that want to integrate DCE with XA build their own C/C++/API wrappers.

RDBMS vendors and ISVs have not taken XA seriously. Sybase's Version 11 XA implementation had a ten-fold increase in transaction commit times when using the XA interface. And, Sybase 11.1.1 has purported improvements in transaction control and performance. Most vendors' solution to the need for cross database transactions is a replication server instead of a two-phase



The relationship between CORBA, DCOM and DCE is not orthogonal. DCE, CORBA and DCOM have similar constructs, namely interface separation from implementation, interface definitions and location transparency.

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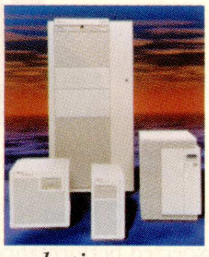

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commit. However, XA in an Encina environment provides for transactions that can span an RDBMS and non-relational persistent storage (that is, queuing service) in one logical unit of work. Encina has RQS and IBM has the MQSeries. Oracle and Microsoft are just now jumping on this bandwagon.

Debugging a distributed application requires hooks into interprocess communication — problematic in a distributed environment. Interprocess communication mechanisms provided by operating systems are limited in the area of debugging. In some cases, RPCs will not complete or execute at all.

After all, DCE would not have developed the *idempotent* attribute for RPCs if it was a stable environment. This feature allows an RPC to execute more than once with the same arguments to provide identical results. This functionality relates back to the fault tolerant nature of TCP/IP. So, the tools that do exist are geared for two-tiered development.

The enterprisewide server market has been dominated by IBM's MVS/CICS since the 1960s. For non-MVS software development organizations, the pursuit of quasi-proprietary, standards-based distributed systems makes sense. For instance, Oracle's Oracle8, used to improve throughput, has server-based queuing technology similar to message-oriented middleware and is also more tightly integrated with transactional processing monitors to reduce the amount of time the system needs to complete transactions and increase concurrency.

Oracle's Inter-Cartridges Exchange (ICE), a software bus based on CORBA, runs with Oracle databases and application servers, and supports components based on CORBA and DCOM. ICE can be used to extend the functionality of each tier. Oracle's statements that Oracle8 would be OO seems to be overstated. For example, the DBMS will not be able to store persistent C++ objects, although this feature seems not to be as important as

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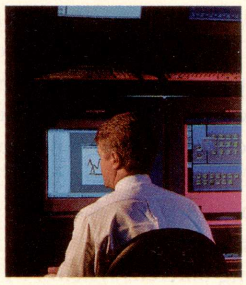

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"Many of our small- to mid-size customers have invested years developing the business rules — the actual application code — that make their company run. They simply cannot afford to totally re-code their business rules and reformat their legacy data. But to stay competitive, they need GUI front-ends, portability to the latest operating systems and ways to make legacy data accessible via the Internet." So says, Fred Conklin, president of Conklin & Conklin (Milford, Conn.), an exclusive HP "Best in Class" reseller and general accounting software VAR.

THE QUESTIONS TO EVERYONE'S ANSWERS

That's why some rapid application development (RAD) tool developers serving the legacy market are looking at the componentization as a way to open these legacy applications to GUIs, the Internet and interaction with off-the-shelf software. However, legacy data is usually non-normalized, with subfields within fields or different record types within a single file. So, begin the process by normalizing all your data files.

Along with the normalization of data, the code of the application itself should be separated into three distinct client-server tiers: the interface, the business rules and the database. Once the data has been normalized and a data dictionary built, the legacy database becomes ODBC-compatible.

Once the application has been modularized and the data normalized, the application is ready for componentization. Modularizing the application programs can involve significant time and code investment, but most companies will find that the effort required to modularize is less than the time and money involved in re-coding.

The initial, character-based interface code, now separated from the business rules and database, can be replaced by a GUI interface, a Web browser or a Windows productivity tool like Excel, Access or Crystal Reports. The new interface and the legacy backend communicate through an ODBC driver. The original file system also can be replaced with a larger and more powerful relational database, such as an Oracle system using SQL. The end result of this componentizing is a system that fulfills the needs of the user for GUI interfaces and access to the Internet, while keeping the essential business rules and data intact.

As for Fred Conklin, the component strategy will allow his customers to continue to add the GUI and Internet features they need without throwing the essential business rules away.

— Amy Petre Hill, is the manager of public relations at BASIS International Ltd., a producer of application development tools for the Business Basic language.

scalability and performance anyway.

Microsoft (Redmond, Wash.) provides Active Server, which relies on DCOM for access to servers through RPCs; Message Queue, which provides remote access to servers via message passing; Microsoft's Transaction Server (MTS), a CICS-like, transaction-oriented application; and Active Server Pages, which supports the creation of Web-based applications running on a server.

TP monitors, such as Tuxedo and Encina, are based on APIs that allow developers to split their applications among different systems. MTS interfaces are included in the ActiveX components that will be used with Transaction Server, no special API-level programming needs to be done.

Weaknesses in MTS are that there is no server-to-server balancing and full two-phase commit is supported only by SQL Server and Acive Directory. These services, which are required for large-scale deployment of MTS services, are not available until Windows NT 5.0.

Although, I am not impressed with Microsoft's primitive thread (pthread) implementation, where each thread has its own process space; database commands can only be executed in the thread in which the database connection is made. In other environments, such as Sun Solaris and HP-UX, DCE pthreads share the same process space.

And within each thread, it's possible for multiple database commands to share the same connection. For example, while DCE pthreads are similar in functionality to Solaris OS threads, the advantage is that they are portable.

Sybase's Jaguar CTS implements a multi-tier distributed computing architecture. In this model, an application is partitioned into three pieces — client side applets, middle-tier components (servlets) and the backend database. In the model, users find and launch applications using traditional HTML pages. But instead of simply loading a static page, a dynamic "applet" is downloaded to the individual's browser.

Jaguar transparently maintains a session between a browser and a server. Unlike a typical HTTP scenario where a new connection is created for each request and response, Jaguar allows a browser to maintain a connection with the server across multiple request-response cycles. However, Jaguar goes beyond Transaction Server with its support for Java and CORBA.

Persistence Software has purportedly developed high-performance distributed systems, live object caching and object-relational mapping, and can be deployed in environments with various hardware platforms and relational databases.

Persistence co-sponsored the original Persistent Object Service specification for OMG's CORBA. Persistence integrates with DCE/Encina and supports the XA interface. Although Forte (Carlsbad, Calif.), NeXt (Redwood City, Calif.) and ParcPlace-DigiTalk (Sunnyvale, Calif.) are proprietary N-tier applications, they should be noted.

If you're trying to make an intelligent decision, issues like what operating systems you need to support, what languages you want to program in and yes your view of Microsoft versus the standards bodies will be of utmost importance. Unfortunately though, it's a political, not a technological debate.

— Frank Teti is an Architectural Expert with Computer Sciences Corp. (Berwyn, Pa.). Cast your vote at fteti@cscmail.csc.com.

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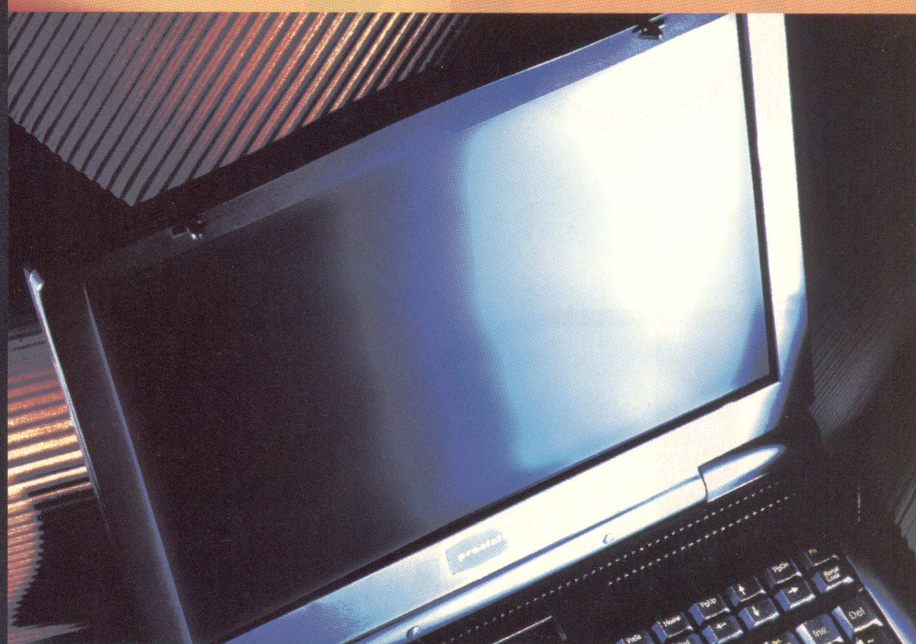

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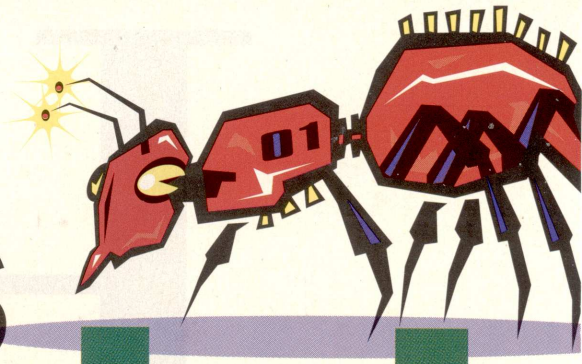


What's Buggin' You?

TANI HAQUE

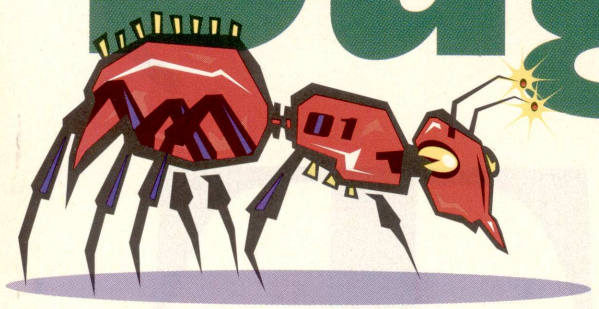
When Dealing With Application Development Glitches, Process Configuration Management Can Turn Customer Opinions From Litigious To Laudable.

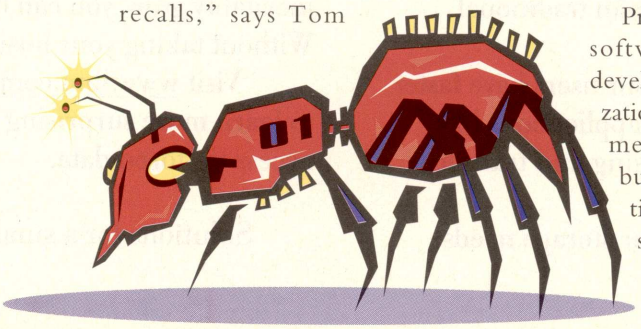
Recalling defective software products can invite a host of unwanted and unexpected results: from casual complaints to expensive lawsuits stemming from consumers and businesses who are dissatisfied with their purchases. It's not only costly, but it can also damage your company's image. And customers can and will take their business elsewhere.

"Software engineers producing software on HP and other platforms are continuously looking for effective ways to avoid the risk of software bugs, which can lead to expensive product recalls," says Tom Burton, CEO of InRoads Technology (Santa Barbara, Calif.), a company specializing in providing tools and education for those working in application development environments.

When developers can't coordinate their efforts, software changes are made on-the-fly. And this can lead to possible system crashes. Usually, there is no central repository of information showing the status of the development project at any given point in the lifecycle. However, something called process configuration management (CM) can bring order and help to improve the situation.

Process CM automates and manages software changes throughout the development lifecycle, allows organizations to bring order in the development environment and produces bug-free software via the integration of process management, version control and change management.



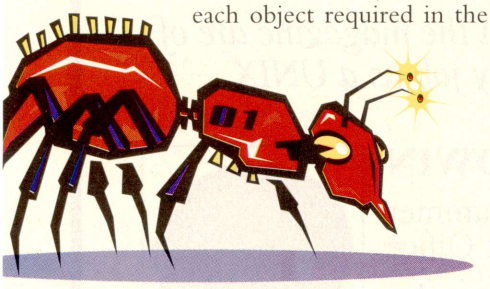


Keeping Track Of Change

The change tracking system exercises control over the version management function, thereby ensuring that source files and other referenced documents are subject to appropriate authorization. In this case, an application may contain many thousands of hardware, software and documentation objects referred to as items. As the requirements of a product change and improvements are identified in the production process, these items will change.

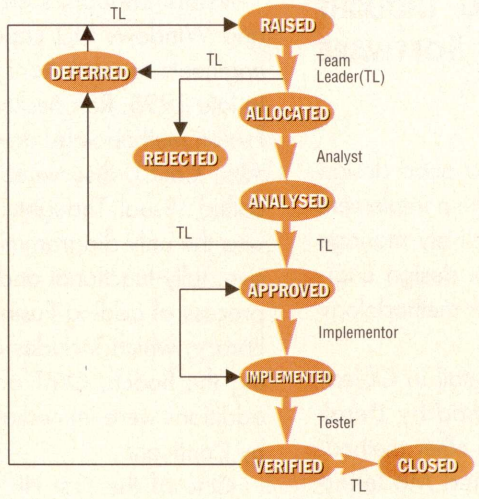
The version management function, which provides the version control and build facilities, can thus share the same product structure as the change management function, thereby permitting close integration. "Essentially, effective implementation paves the road to successful software development," says Burton.

The merit of this now hot software engineering discipline is that it meshes the process of change with the actual structure of a product or application, creating a framework for smooth development work. Furthermore, process CM matches people's roles, responsibilities and tasks in the development project with the lifecycle of each object required in the



building of an application. Such objects, which may include hardware parts, source code, design documents, documentation and CAD files, go through different states (i.e., alternative transition paths) throughout their respective lifecycles. Transition from one state to the next is made possible via process workflow.

Change Request Lifecycle



Courtesy of SQL Software

We've Caught 'Em, Now What Do We Do?

Here's an example of how the lifecycle of a software bug might be managed under the control of process CM: a defect is found; a change request is issued and routed to the appropriate manager for review; the manager then authorizes the change request and sends an e-mail notification to the developer; and in turn, the developer makes the change and sends it back for approval.

In parallel, other activities take place because the lifecycle of a bug generally triggers actions on other objects. For example, other members of the team are informed via the process CM system about what change was made and how the documentation must be updated. Testers, on the other hand, also must create specific test plans before the object transitions to a different state. In such an environment, process CM acts as the glue that cements together people, processes, objects and development tools. It also provides high visibility over the entire project via a central repository of information about the development work.

Following The Blueprint

Process CM creates an environment in which the processes serve as a blueprint for successful development. For

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MUSING AND FUSING WITH VISUAL THOUGHT

FUSION METHODOLOGY AND VISUAL THOUGHT HELP REDUCE OBJECT-ORIENTED SOFTWARE COMPLEXITY AT HP

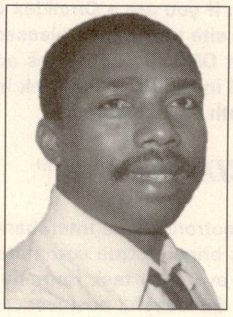
Savvy software developers know that a good design methodology, together with a tool to help implement the methodology, is required to effectively manage present-day software projects. HP software design engineers believe they have both in HP's Fusion methodology and in a design tool called Visual Thought.

The Fusion methodology, described in detail in *Object-Oriented Development: The Fusion Method* by Derek Coleman et al., extracts the best features of other methodologies, such as Rational Corp.'s Unified Modeling Language (UML), and combines them into one solution. The phases of the Fusion method are simple enough: Analysis — discovers the relationships between objects and classes in a system; Design — represents these objects and classes in a formalized notation; and Implementation — transforms a design into programming code.

Visual Thought's cross-platform (UNIX, Windows 95 and Windows NT) capabilities have enabled HP's design engineers to work transparently across a mix of platforms. In late 1995, Ron Becker, a software process consultant for Fusion methodology development at HP headquarters (Palo Alto, Calif.), discovered a UNIX-based diagramming tool called Visual Thought. Becker found that Visual Thought was the only diagramming tool on UNIX that was inexpensive, fully-functional and easy to use. Becker undertook the process of adding Fusion to Visual Thought's methodology library, which includes drag-and-drop palettes implementing the Booch, OMT and Jacobson notations. The Fusion additions were immediately included in the commercial tool by Confluent.

One of the first HP design engineers to apply Visual Thought was Kenneth Green of HP's Communications Measurement Division (CMD) in Australia. "I was very frustrated with the lack of a usable tool under UNIX." Green thinks Visual Thought has turned out to be "a very flexible and easy-to-use diagramming and design tool that can handle a host of tasks ranging from system design (func-

PEOPLE ARE TALKING...



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tional block diagrams of hardware and software systems); software design (Booch, Fusion and custom notations); process design (custom notations), and protocol illustrations (time sequence diagrams)."

The ISDN BRI Link product development team in HP's Enterprise Networking and Security Division (ENSD) in Grenoble, France was an early Fusion adopter. The ISDN BRI Link, designed using Fusion, automatically manages ISDN connections, sending and receiving IP packets through the ISDN network. It consists of an ISDN "box," which establishes the physical connection to the network, and the software that resides on HP-UX servers, which mediates interactions between the ISDN box and TCP/IP stack.

"Although the Fusion models were easy to learn and work with, the going wasn't easy at the start because object-oriented development requires a different way of thinking about product design," says Armand Giraud, an HP software designer with ENSD. "The Fusion palettes in Visual Thought provided consistent drawings, which were very important in developing the ISDN software."

To effectively support Fusion diagramming on the ISDN project, Visual Thought got the nod. Other UNIX-based design and drawing tools were hard to customize and maintain, too expensive and unable to create consistent drawings. After the ISDN project was completed, both Fusion and Visual Thought were chosen as the methodology and tool to support the Smart Card Management System (SCMS) project. Designed to manage smart cards throughout their lifecycles, SCMS is a component of HP's ImagineCard Web, ImageCard Corporate and Single Sign On (SSO) solution. Operations supported include smart card personalization, locking and unlocking, and other security operations.

Visual Thought is now being used for Fusion diagramming and general technical graphics in HP divisions around the world, including those in Australia, Canada, France, Spain, the United Kingdom and the United States.

— Chad Hill is a marketing communications consultant and writer with Hill Communications (Pleasant Hill, Calif.).

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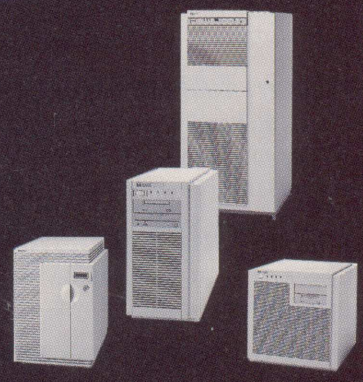

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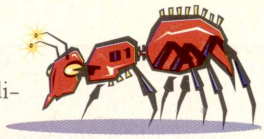

example, such processes may indicate how the various item types such as source code, design documents and image files are to undergo version management. Other processes may specify who is authorized to change the software during the various states of the lifecycle. In general, formal processes document the ways the organization conducts the development work while taking into consideration contractual requirements and various standards, such as ISO 9000, which must be met. Such an approach facilitates all aspects of parallel and concurrent cross-platform development work where a multitude of changes are continuously implemented to millions of lines of code.

Under such a framework of operation, developers and managers can be sure that the application developed is complete, reliable and top quality. This is the case because process CM provides a complete audit trail of all development activities undertaken to build the application. This audit trail can show that the application is complete and incorporates all the wanted revisions. Such capability provided by today's cutting-edge process CM systems is a great asset in proving that the application will satisfy users and that there won't be any need to recall the product because of the performance of the software.

Customers who receive poorly designed and improperly debugged software can merely complain or they can hit you with a lawsuit, either of which can result in a loss of corporate revenue. Fortunately, process CM provides a preventive mechanism for ensuring that software components included in a product are complete and bug free. Organizations which choose this path, will be able to avoid the risks and reap the rewards of improved and intelligent software development.

—Tani Haque is CEO of SQL Software (Vienna, Va.). He can be reached at info@sql.com.

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Handling Excess Baggage

Richter SEWN Products System Provides A Stitch In Time For Monarch Luggage.

Established in Brooklyn, N.Y. in 1946, privately-owned Monarch Luggage has grown into one of the most diversified companies in the industry, specializing in luggage, business cases, sport bags and travel accessories. They distribute key lines such as Bill Blass, Lucas, Wilson and Converse, as well as non-branded items. Their market includes department stores, mass merchandisers and specialty stores throughout the United States.

In 1995, Monarch Luggage decided to replace its existing distribution system. It was a homegrown network of PCs and a UNIX server. The network was basically a big filing cabinet and a billing machine. With a huge EDI client base that is close to 40 percent of their business and growing, Monarch needed a manufacturing/distribution system that could manage its EDI requirements at every stage — from order receipt through placement of sourcing orders overseas, to receipt of goods and shipment to customers.

After examining numerous software systems, Monarch Luggage selected the Softgoods Distribution System (SEWN) from Richter Systems Inc. (New York, N.Y.). Monarch purchased the Richter SEWN system because they believed that Richter's functionality paralleled their company's needs more closely than any other business application software. Monarch hired a new MIS director responsible for implementing the Richter SEWN system.

With SEWN, Monarch was able to move a greater product volume with fewer employees.

ALL SEWN UP

By July 1, 1996, Monarch installed its Richter SEWN Products System on two HP K100 servers with 4GB of storage each. The duplex servers are wired into a LAN network hosting 62 PCs, 18 printers, three barcode labeling machines and multiple Micon communication boxes. The Micon boxes allow Monarch to have real-time computer interaction with their other locations across the country. It is a scalable architecture, which can easily handle more PCs or a future RDBMS system, such as Richter's Oracle-based SEWN 2000 system.

Monarch Luggage has worked closely with Richter to enhance the basic SEWN package. They created a locator system for tracking product in their multiple warehouse locations, as well as a barcode labeling program, which operate as part of the SEWN system. On the financial side, they've used the integrated Richter modules for accounts receivable, accounts payable and general ledger.

THE DISTRIBUTION DRIVE

The new Richter SEWN system allows Monarch to source raw materials for final assembly from factories overseas. When products arrive at their distribution facilities, they are then packaged for the U.S. market. Once a product is received at the distribution centers, it's tracked via the locator system. RF communication modules track the goods through the warehouse and subsequently control the movement of merchandise to flow racks for order selection and shipping.

The Richter system receives orders electronically from all Monarch EDI customers. For each order, the system produces a picking document, which allows pickers to ensure that they are matching the proper goods to the orders. The system then produces a packing list to go inside the carton, and a barcoded label or regular shipping label to go on the outside of the carton. After the goods are packaged, an Advance Ship Notice (ASN) is generated and transmitted to the customer. The ASN allows the customer to see what's on the way and identi-

fies the contents electronically without having to open the package. The Richter system also allows Monarch to generate an invoice, which is sent electronically to the customer on the same day as the ASN.

For most customers, Monarch replenishes inventory on a daily, weekly or bi-weekly basis. An EDI coordinator pulls new orders by 8:00 a.m. daily from a multitude of networks. The data is then downloaded into the SEWN system and processed. Inventory is allocated and pick tickets are generated by 11:00 a.m. Because orders are shipped on a three-day turnaround, the SEWN system helps locate and process each order in 24 hours. Orders are loaded onto trucks and delivered on time.

Their new distribution system helped increase accuracy and efficiency. Because Monarch was able to move a greater product volume with fewer employees, the system made them more cost efficient. Monarch also benefits from fewer mistakes, quicker turnaround and improved audit capabilities. If an EDI order is received at an invalid price, the system quickly identifies any disparities so they can be resolved immediately.

Monarch Luggage also uses the Richter SEWN package to generate sales projections based on historical customer purchases. These projections enable Monarch to buy products on a timely basis, which increases inventory turns and reduces inventory levels. Monarch is able to improve its on-demand delivery capabilities which in turn increases re-order business. Inventory valuation is dynamically updated allowing Monarch to closely track its profitability.

As a member of the Richter Systems User Advisory Council, Monarch Luggage is actively participating in the development of the Oracle-based Softgoods Manufacturing/Distribution package SEWN 2000, which will be available in late 1997. The Richter SEWN 2000 system will provide Monarch with unlimited scalability and the ability to integrate with a multitude of third-party products. It also will allow them to better slice and dice incoming customer data, such as point of sale (PoS) information, for improved production planning.

"The greatest benefit of the Richter SEWN system is that it has allowed Monarch Luggage to go from a legacy system to a fully integrated sourcing, distribution and EDI environment in nine months. This quick start-up was possible due to the inherent functionality in the system, its flexibility and ease of use," said Kimberly Vasiliou, MIS director at Monarch Luggage. "We've trained more than 100 people with double and triple backup and got them up and running in less than a year."

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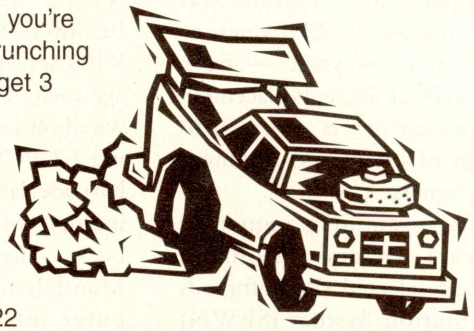

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Texas Wants You Anyway

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Phil Sheridan

In 1996, over 130,000 elderly and disabled adults living in Texas were victims of maltreatment either by family, friends and acquaintances, or they were simply unable to take care of themselves and had no means of medical assistance. During the same year, Texas' child protective services received 100,000 reports of children allegedly abused or neglected by their parents.

To respond to these vulnerable citizens, the Texas Department of Protective and Regulatory Services (PRS) was established to protect children in their homes as well as adults who are elderly or have disabilities.

HIGH TECH PROTECTION

To assist in that mission, PRS recently implemented the Child and Adult Protective System (CAPS). CAPS automates casework and reporting functions for the state agency, while ensuring that caseload managers have the most accurate information to address the demands of each case.

CAPS was developed and implemented by Andersen Consulting who brought in GTE Customer Networks (CN; Austin, Texas) to operate the servers and process critical information for the PRS reports. GTE CN runs daily batch stream jobs on two HP K400 systems, under HP-UX 10.10 using Unison Software's (Santa Clara, Calif.) Maestro for automated job scheduling. Everyday, 6,000 PRS caseworkers investigate reports of adult and child abuse and neglect.

As the service provider for PRS, GTE CN must process logged emergency calls and ensure that caseload managers receive daily up-to-date reports combining adult neglect cases, corresponding historical data, child abuse cases and funding status.

Because the HP K400s are networked and have cross-dependencies, one job must be completed before the next sequential job is launched in order to run successful batch jobs and deliver accurate reports to caseload managers. If an error occurs in a job that is currently running, an operator must be flagged or automatic correction must be invoked.

GTE CN needed to find a way to guarantee that jobs executed in sequence, based on the job dependencies. For example, certain jobs couldn't run until backup tapes were loaded or ftp files were transferred. They also needed a job scheduling tool that was self-correcting — one that could either automatically restart a job if the network failed or generate alerts if a job required operator attention.

By using Maestro, GTE CN was able to set up its job scheduling structure by defining job dependencies and schedules, without having to write scripts to set job parameters. "Our operations staff can make sure jobs are executed correctly and in the right sequences based on predefined dependencies," says Kyle Holmes, operations supervisor for GTE CN. "Maestro also allowed us to set up recovery procedures for automatically correcting job errors."

Maestro compiles job log statistics for GTE CN and formats final reports that identify completed jobs, the number of times an operator had to rerun particular jobs, the types of errors that occurred and a schedule of the next day's jobs.

Maestro reports on specific errors and makes it easy to troubleshoot problems. "Maestro's intuitive GUI made it possible for our operators unfamiliar with the product to easily follow prompts to track job status and check errors," adds Holmes. Maestro also has failover capabilities which automatically forward jobs to the second HP K400 if the primary server fails.

Prior to installing Maestro, GTE CN was using a scheduling tool which required schedules and dependencies to be scripted. It couldn't detect or autocorrect errors. It also lacked fault tolerant capabilities.

By automating processes and scheduling jobs on the HP K400s, GTE CN ensures integrity of the information that PRS caseload managers depend on to help afflicted adults and children throughout the state of Texas.

Unison Software can be reached at 5101 Patrick Henry Dr., Santa Clara, CA 95054; (408) 988-2800; www.unison.com.

Fred Mallett

Asleep At The Wheel

My Jeep can beat your Porsche in a one-quarter mile race! What? You don't believe it?

Did I mention that the one-quarter mile was over rough terrain and mud, and on a 30 degree incline. The Porsche engine has the ability to move the tires really fast, but the tires are not good in mud, thus not grabbing much ground. There's no data to process, you might say. The analogy provides a good way to delve into CPU-related tools for measuring performance issues. Also, there are many reasons why a CPU is not busy or too busy that are not directly an issue of processor speed.

The same can often be true in a system that has a bottleneck in any of the I/O areas or has limited memory; much time is spent moving things around instead of getting good data to the CPU to be crunched. There was a time when MIPS was the standard of measurement for CPU performance. People typically joked that it was an acronym for "Meaningless Indicator of Processor Speed." In actuality, this was not far from the truth.

So, how can we tell what the CPU is doing? Usually by looking at the time spent actually processing compared to when the CPU is idle (or bored). If your system is acting slow and you upgrade the CPU with no other changes, it's possible that the CPU will still be bored. To decide whether it's upgrade time, the goal is to determine if there is a bottleneck in feeding data to the CPU or if the CPU is just not fast enough for the tasks assigned.

The HP-UX commands commonly used in monitoring the CPU are: **ps** (process status), **uptime** (a crude measure of system load) and **iostat** (reports system CPU usage over time).

There are many reasons to use the **ps** command when monitoring performance. For example, you can see how heavily the system is being used. However, you must know what's normal before the number of processes running can be determined as light or heavy.

MY LITTLE RUN AWAY

Next, you can look for "run away" processes or processes that are consuming large amounts of system resources. A good set of options for this is **ps -elf**. The **e** means all processes, the **l** is long format and the **f** adds "fullness" to the output (such as time started and more of the command line that started the process).

The length of the lines in the output of **ps** are such that I will not show it here, but will instead point out the relevant columns, and what meaning you might derive from them. Note: the discussion below is for HP-UX and the meanings of the same symbols are often different on other systems. Use the man page to be sure. You should consider issuing a **ps -elf | more** command and look at the output before following along with the rest of the discussion.

The first column in the output of **ps -elf** is titled **F**. This stands for flags. This will be a number, and the meaning is derived by seeing which of the numbers in the following chart will add up to the number displayed.

```
0   Swapped
1   In memory
2   System process
4   Locked in core (e.g., for
    physical I/O)
10  Being traced by another
    process
20  Another tracing flag
```

For example, if the number is odd, that process is currently using system resources (has the In Memory flag set). If there are an excessive number of swapped processes (those with a flag setting of **0**) and which ones are swapped keeps varying as you reissue **ps**, you are in a thrashing situation. That is where processes keep getting swapped in and out so the OS has enough room in memory to run the other processes. Buying more memory or doing less work is a solution.

Another temporary work around would be to run larger tasks in serial, instead of running them all at once. Let the scheduler figure out how much time is spent on each job. Often you can get all the jobs done quicker by dedicating the whole machine to run each job in turn, rather than having the problems of paging and contention when many jobs are executed at once.

Processes with a **3** in the flags column are OS processes — they are usually in memory (**1**) and listed as system processes (**2**) for a displayed value of **3**. It might be common to see several swapped processes if they are not currently active. For example, a user shell (or any other process) that has been idle for some time will often end up swapped out. The problem is when

processes that are currently expected to be running end up swapped out.

THE CURRENT STATE OF A PROCESS

The second column shows the state of the process. This is typically an **S** (sleeping), **R** (runnable; it does not mean running, as the man page implies) or **T** (stopped). If you see lots of processes that are in the runnable state, this could indicate a problem. These processes are referred to as being in the run queue; they are resident in memory and waiting for a turn to process. Generally, this can be solved with a faster CPU, which, of course, will probably need more memory as it will be doing more. The number of processes that are in a runnable state might always be high in an environment where many small tasks are executed. You need to know what is normal for your system.

If the state of **W** (waiting) shows up often, there is a different problem. This usually means that the process is swapped out but otherwise runnable. This also is an indication of thrashing if you typically have many processes in this state. Waiting means that not only is the process not getting to run when it is ready (runnable), but its data set has been swapped out of memory (or inactivated on HP-UX 10.x). Therefore, it will require some I/O when it finally gets a chance to run. That is not a very efficient operation.

SIZING A PROCESS

Another interesting column is the one titled **SZ**. This shows the "core" size of the process in memory. It does not show the total size of all memory used, but still can be of use in estimating the "load" that a particular program might put on the system. Related to that is the **TIME** column, which shows how much actual CPU time has been used by the process. This should be read in conjunction with the **STIME** column which shows approximately when the process was started (or the day, if it has been running for a long time).

If a process shows a couple hours of CPU time, it might be a processor hog. However, with an active server process that has been running for a few months it would not be unusual to have used up lots of time. You also can use these numbers to look for a runaway program sometimes.

There are many reasons why a CPU is not busy or too busy that are not directly an issue of processor speed. But, you must know what's normal before you can determine if the statistics are high or low.

If the **TIME** number keeps increasing and gets well beyond normal completion time for that task, there might be a problem. Note that elapsed time is not a good indication, but CPU time is. As always, you must know what is the approximate "normal" time for a task. This can be found by using the **time** command during a normal execution of a program: "time program."

OBJECTS AT REST

In the output of the **ps** command, you can get an idea of what is happening. But, it would be a pain to keep running it and pouring over the output. Enter a couple commands that will summarize information for you. First is the **uptime** command. In addition to telling you how long it has been since a machine was booted, it also summarizes the run queue information. Here is a sample output:

```
5:31 pm up 47 days, 18.46, 4 users, load average: 1.82, 1.06, 1.04
```

We see the machine has been up for a couple months and four users logged in. The load average data is reported in three windows of time: the last minute, last five minutes and last 15 minutes. The numbers above show an increasing amount of activity, as the average number of runnable processes in the last minute was higher than the previous one. The numbers basically represent how many processes are ready to run but cannot because other processes are also in the queue.

Documentation seems to indicate that these numbers should be rather low, although four to five is not uncommon on a heavily used multiuser machine. I know of some Web serving machines that are "normally" running with a load average of 40 to 50, and yes, they are experiencing some delayed requests. Once again, it's up to you to know what's "normal and acceptable" on a given machine before you can say if some load average number is too high.

Another good method is to look at the "other side" of the run queue, the system idle time. This can be done nicely with the **iostat -t** command. It will report some percentages of time spent in different areas of processes, like user time verses system time. It also gives a nice single number showing what percentage of time the processor was idle (under the **id** column). If you find that a troublesome system is running with a high load average number but it is also showing a high percentage of idle time, there is a problem.

A load average over 10 on a multiuser machine is generally considered high, but might just mean a well used machine. This means that there are lots of things ready to run, but the CPU is mostly idle. This typically indicates too little memory or many jobs are using data from across the network, and we are not getting it fast enough. On today's high-end products, it can also mean that your disk I/O channels are not fast enough to feed those gigabytes of memory fast enough.

—Don't let Fred get idle. Send your questions to frederm@famece.com.

Would you like to continue to see articles on this topic? Circle on reader card yes 308 no 307

Ryan Maley

Finding The Best Route

Recently, Microsoft released Routing and Remote Access Service (RRAS) for Windows NT Server. RRAS (known as Steelhead while in beta testing) turns an NT system into a fully functioning router. The software is available as a free upgrade to NT 4.0 (Service Pack 3 must be installed before RRAS), and will be bundled into NT 5.0. It does not work with NT 3.x.

First, let's review the routing features available in NT 4.0:

Point to Point Tunneling Protocol (PPTP) allows the creation of secure virtual private networks (VPN) over the Internet. Network adapters can be configured to permit only PPTP packets. This allows PPTP-configured machines to pass encrypted packets and ignore all other packets in a "private network" using public network infrastructure.

Point to Point Multi-link enables multiple physical links to be combined for more bandwidth – two 28.8 analog modems can create a 56K connection. Unlike some of the new 56K modem technologies, this is a true 56K connection in both directions.

Routing Information Protocol (RIP) allows routers to broadcast and receive routing tables and the distances to various destinations. This allows RIP routers to discover shorter routes to their destination without operator intervention. The router only keeps the shortest route in its table. RIP works with IP and IPX. Version 1 is standard in NT 4.0 and is available in hardware-based routers. Version 2 is included in RRAS.

RRAS offers some significant features to the two NT services that it is designed to replace: Remote Access Service and Multi-Protocol Routing.

Packet filtering provides a mechanism to block unwanted IP or IPX packets from being passed by the router. The filtering features are similar to those in hardware-based routers; you can block IP addresses, ports or protocols. The filters do not provide protection like application firewalls (in which no packets are passed directly between networks), but can be an important part of security procedures. RRAS also can be used with Microsoft Proxy Server, which provides some application level firewall capabilities.

Demand Dial Routing allows network connections to be established as needed. This is useful for a connection made through dial-up lines. For instance, you've used the Demand Dial wizard to tell your machine that when you need a route to address x, use the modem and dial the RAS server at the main office. If you are working remotely and suddenly need access to the main office, the computer will check to see if there is a connection and if not, dial out and create one. It creates the route as needed and can drop the line after a specified time.

Open Shortest Path First (OSPF) routing is an advancement over RIP in handling large, mixed networks. OSPF routers store routes in a "map" which describes the network. Unlike RIP, it can maintain separate routes to a single destination. Unfortunately, OSPF routers are more difficult to maintain and administer. And generally, they are used in large, complex environments.

An API to RRAS also is included. A software development kit is available as a separate product to allow developers to use the API to develop their own applications or integrate their communications hardware more directly with the NT operating system.

With RRAS, Microsoft is positioning NT as an alternative to dedicated hardware routers. Being able to configure routing with the NT GUI is an advantage over the rather cryptic commands of Cisco Systems' Internetwork Operating System. Microsoft claims an RRAS machine will forward more than 30,000 packets per second. This means it can handle T1 speeds. However, the test machine was an expensive 166MHz Pentium Pro with 256MB of memory and two PCI 10Base100 Ethernet cards. It seems there will be a place for dedicated hardware routers for quite some time.

—Route all your questions and comments to Ryan at ryan@maley.org.

Resources

Microsoft Routing and Remote Access Software
www.microsoft.com/ntserver/info/routing&ras.htm

NT Service Pack 3
www.microsoft.com/ntserversupport/content/servicepacks/default.htm

Routing Information Protocol version 2
www.internic.net/rfc/rfc1388.txt

Open Shortest Path First Protocol
www.internic.net/rfc/rfc1583.txt

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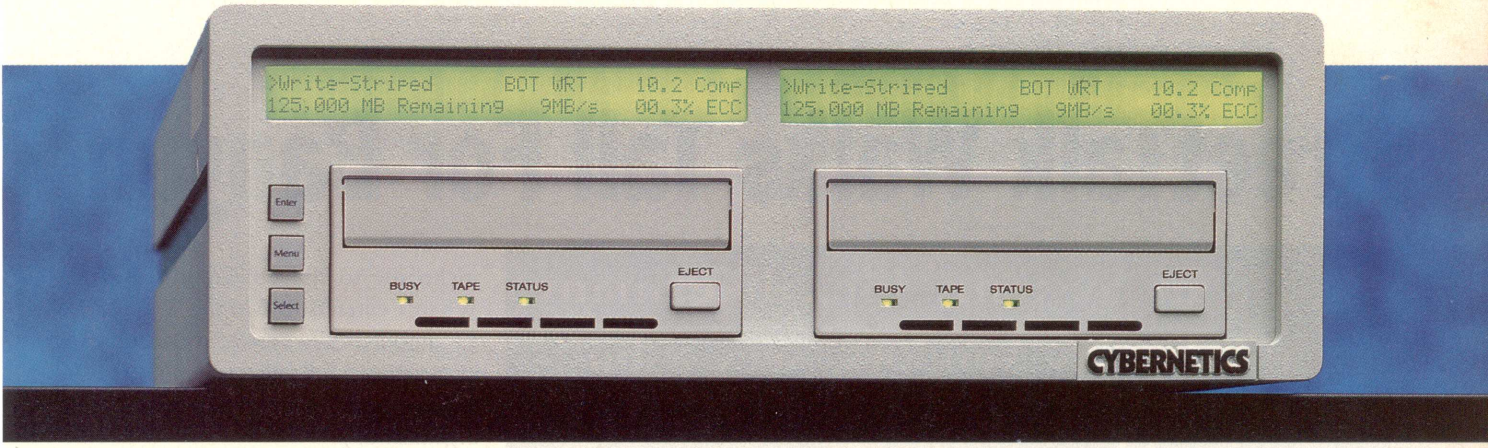

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Let's face it, your backup is only as good as your tape. And all the performance in the world won't get your data back if your tape is weak or dirty. Fortunately, there's no need to compromise. The CY-8000 is the safest, the most reliable, *and the fastest* 8mm tape drive on the market.

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The CY-8000 uses ***Advanced Metal Evaporated*** media, a 100% cobalt, 2-layer tape that features a diamond-like coating for exceptional durability. And it's the *only* 8mm drive with a ***built-in head cleaner*** to keep the tape path free of contaminants, further ensuring data integrity and virtually eliminating the time and expense associated with cleaning kits.

In addition to superior design, the CY-8000 offers unbeatable performance. Able to store ***25 GB at 3 MBS***, uncompressed, you can achieve up to ***125 GB at 9 MBS*** with optional data compression. With 257% more capacity and 500% greater speed* than industry standard 8mm drives, the CY-8000 can backup faster to fewer tapes.

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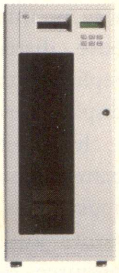
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CIRCLE 160 ON READER CARD

StreetTalk Walks Tall For Banyan

Banyan Systems Inc., like many third-party vendors, sees a business opportunity in Windows NT.

Until StreetTalk for NT (ST4NT), Banyan had not done any porting of services to the NT platform. Now, Banyan is betting that administrators and solution developers want the ability to mix and match their solutions as much as possible. It's a good bet in my view.

StreetTalk (ST) is a service that up until last year ran only on Vines servers. It's a Banyan directory service used to assign names and "attributes" to network "objects" (users and resources), and to distribute them throughout a network or enterprise. Attributes describe and categorize properties of a resource.

A StreetTalk Directory Assistance (STDA) service gathers data about resources and personnel from other servers, unifies it into a cohesive database, distributes it to other servers, replicates the database as required and displays this data as it's requested.

It's most commonly displayed via a pattern matching pull-down list, where a user can type a part of a resource name and select from the list of resources that match the pattern. Vines ST items are delimited by the @ sign and are organized into a hierarchy of "items" (username), groups (logical association of services and users) and organizations. Organizations are logical entities that contain many groups, and groups are entities that contain many items.

StreetTalk Advantages. With ST, relocation and replacement of services without directly impacting users is possible, primarily because their ownership is based on a logical entity (the organization) and not a physical object (like a server). As long as an item or group stays within the same organization, it can be easily relocated from one server to the next.

Quick location of available network resources by administrators and regular users alike is made possible through the use of the STDA database (access to which can be integrated with any Microsoft Office/Lotus SmartSuite application and a plethora of others).

Individual users do not need to know where a resource is physically located or which server the service resides on in order to use it. They need only know a part of a resource name. With a little planning and naming of resources, according to a common convention (a naming convention based on the "type" of resource is usually best), users can find a needed resource using STDA quickly and efficiently.

Another methodology native to ST and heavily advantageous to the speed of resource location is the ability to assign nicknames to ST items. For example, if I just don't feel like typing out **BobVilla@engineering@ThisOldHouse** every time I wish to send this user mail, I can easily assign a nickname to the object, like **BobV**. When I enter **BobV** in the **To:** block, ST automatically converts the entry to its associated full object name (according to a predefined default group and organization).

Anyone in Bob's group can refer to him as **BobV**, anyone in his organization can refer to him as **BobV@engineering**, and those individuals outside his organization may refer to him as **BobV@engineering@ThisOldHouse**. Nicknames also can be developed to refer to any object in a Vines enterprise. A nickname could be created to read **carpenter** in the group **material** that exists within the organization **ThatOldHouse** to refer to **BobV@engineering@ThisOldHouse**. In this manner, administrators can offer their users the ability to quickly locate and pass information to the users of another organization in the enterprise by simply addressing that person or resource as **carpenter**.

To support StreetTalk Guaranteed Login (SGL), ST also provides the ability to "shadow" groups and associated users to other servers. This allows a user whose home server is down (or unavailable) to login, thereby offering users the ability to continue to work regardless of the availability of a particular resource (even their home server). ST allows up to two shadows to be created for each group within an organization, providing redundancy for negligible cost and negligible administration.

ST Naming Conventions Versus NDS & NT. One (albeit small but relevant) advantage of using StreetTalk over NDS is StreetTalk's ability to use spaces in the naming of items. For

instance, the ability to name a user **Bob Villa@engineering** is not available with NetWare. The flexibility that this adds to ST is the ability to uniquely identify a wider range of items, and to name them intuitively to the users of the ST service. Another limitation on NDS is the 47 character limit on item names (there is no strict one for one comparison here, but this is as close as we can get) versus 63 in ST.

And ST has the ability to associate a user or resource with a particular department (group and organization) versus naming just the user/resource in NDS or NT, and assigning it a home server. Using a naming convention in NDS/NT that allows the users of that service to identify the person's location/department creates some unwieldy usernames.

Users and resources are not assigned; to individual servers, as they are in NetWare or NT, rather they are assigned to the organization. So again, as long as they stay within the organization, they can be moved from one server to the next with no interruption to their service whatsoever.

Resource Database Collection, Distribution And Replication. As far as collection and distribution of StreetTalk items are concerned, there are two possible types of STDA services: a "master" STDA service collects ST information directly from services on a server, and a "satellite" service collects this data from other satellite services and master services. The STDA hierarchy is generally viewed with the master STDA service at the top with satellites beneath it.

STDA master services collect StreetTalk information from any type of service (file, print, etc.) on administrator-specified servers. The list of servers can be modified at any time with no interruption of functionality to the users. Master services poll Vines servers periodically throughout the day for group and item information, and incorporate any changes from the last poll into a comprehensive database.

Satellite services only pull ST data from master or other satellite services and are usually used as a "connect point" for data to be distributed from a network to the enterprise. When satellite services are started, they download data from their target servers and construct their database from the data that they receive.

Using simple filter methodologies called "inclusions," "exclusions" and "exceptions," an administrator of an STDA master service can decide what resources are advertised as being available for use. This is primarily advantageous for "dedicated" file services and the like. Its two primary advantages are the streamlining of the advertised STDA database and an increase in the security of a resource (so it's not advertised to would-be users). When a master service polls a server, it looks for ST information and all inclusions; (an inclusion can be an address that is not native to Vines like an Internet mail address: **greg@webnology.com** and its associated Vines nickname (perhaps **greg**).

Once it's finished collecting all of this information, it moves on to another server. If no other servers exist in the list of servers it has been assigned, it waits for the next "rebuild" of the ST database. The "rebuild" is an action that the administrator of a server can take to mark the ST database as having new items — this can be performed at any time to speed up the advertisement of a resource.

Once the database is completely built, it's marked with a revision number. Thereafter, only "changes" to the last known accurate database are gathered by other STDA services. This preserves WAN bandwidth and speeds response time for the end user in the long run.

SEEING IT ALL IN ACTION

User Bob Villa has been assigned the ST name **Bob Villa** and the ST nickname of **villab**. He has been assigned to the group **Engineering**, which is assigned to the organization **ThisOldHouse**. His unique StreetTalk identifier would be **Bob Villa@engineering@ThisOldHouse**, or just **villab** to the folks in engineering. Users in other organizations that were attached to the Vines enterprise could always look Bob up, even if they forgot his name but remembered some parts of it. For instance, "I remember his name is Bob, but darn it, what was his last name?"

I simply access ST information that has been collected and stored in a database and then integrated into my current application. Let's say it was mail. I start to type out the parts of Bob's name that I remember and voila! All of the users across the enterprise that match the characteristics that I type in come up in an easy to browse alphabetical listing. If I find several matches, I can refine my search to specific attributes that I am sure that Bob will have (for example, a job title or phone number). While the advantages of ST (more specifically ST4NT) are numerous, the critical missing part has yet to be filled.

WILL THEIR SHIP COME IN?

In mid June, I interviewed Shaun Hayes, services development manager at Banyan, and had a few challenging questions for him regarding the development of ST4NT, the development direction for native Banyan Services and the company's position on what this port of its flagship StreetTalk product meant.

While Shaun stressed that the service development going on for ST4NT is an attempt to provide a service to Banyan customers that are migrating to NT and is viewed by Banyan as a market opportunity, I wondered privately if "market opportunity" was the only consideration for a product rollout.

One thing is certain, if ST4NT will do for Banyan what StreetTalk did for them in the past and they market it properly, they're on a real comeback. Without a zealous marketing and public relations campaign, Banyan and Banyanites are destined to become two archaic monikers found only in an Internetworking Glossary of Historical Terms.

—What talk have you heard on the streets? Let Greg know at greg@webnology.com.

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new Products

Network General Adds NetXRay Products

Network General Corp. added the newly acquired NetXRay and Distributed NetXRay products to its Sniffer product line. The NetXRay fault and performance management products provide network troubleshooting and protocol analysis for front line network troubleshooters. NetXRay is a software-based network management application for general monitoring and troubleshooting of common network problems.

Contact Network General Corp., 4200 Bohannon Dr., Menlo Park, CA 94025; (800) SNIFFER; sales@ngc.com; www.ngc.com.

Circle 400 on reader card

Jot and QuickNotes Available For HP 300 Palmtop

Communication Intelligence Corp. (CIC) announced that their Windows CE software is included on HP's CD-ROM featuring new software for the HP 300 series palmtop PCs. The CD-ROM will feature CIC's Jot handwriting recognition software and QuickNotes mobile notepad.

Jot turns what you write into type, virtually in real-time. It is compatible with all CE applications. It recognizes hand printed characters and supports Western European languages out-of-the-box.

QuickNotes is an application which allows people to capture handwritten notes and drawings on their Windows CE handheld computers.

Contact CIC, 275 Shoreline Dr., Ste. 500, Redwood Shores, CA 94065; (650) 802-7888; sales@cic.com; www.cic.com.

Circle 399 on reader card

Cuadra Associates Offers STAR Web

Cuadra Associates announced the STAR Web Interface that allows fully-interactive retrieval of large amounts of data from the Web, and at the same time can be used on intranet networks for in-house information storage and retrieval.

Contact Cuadra Associates, 11835 W. Olympic Blvd., Ste. 855, Los Angeles, CA 90064; (310) 478-0066; hq@cuadra.com; www.cuadra.com.

Circle 398 on reader card

Pericom Software Announces teemWorld

Pericom Software announced V1.2.3 of its teemWorld terminal emulation suite for Java-based clients. TeemWorld deploys host-based legacy applications to virtually any desktop client (PC, workstation, Mac, OS/2) or thin client (NC, NetPC, intranet) supporting a Web browser or JVM. It includes support for Digital VT52 to VT420, DG D410, IBM 3270, IBM 5250, IBM 3151, HP 700/92, ANSI BBS/SCO, Tandem 6530, Wyse, ICL 7561, ADDS and Hazeltine terminal emulations.

Other changes include: Java Development Kit (JDK) 1.1 support with security features; scripting language support; teemWorld can be run multiple times from within a browser; Hotspot definitions are saved; the startup/load time has been reduced; and the Exit button works with applets when running in a frame.

Contact Pericom, Golden Crest Corporate Center, 2271 Hwy. 33, Ste. 106, Hamilton Square, NJ 08690; (609) 588-5300; sales@pericom-usa.com; www.pericom-usa.com.

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ClearSystems Releases ClearStats Version 2

ClearSystems released ClearStats/Lite Version 2 for Windows NT and ClearStats/Lite Version 2 for Solaris, a network statistics and trend analysis software. ClearStats/Lite Version 2 for HP-UX is soon to follow. ClearStats II collects SNMP MIB II, RMON and Frame Relay data, and generates trending reports on utilization, error rates, failures and other network parameters.

With ClearStats, you can establish a network's baseline characteristics and continually monitor the network to identify capacity problems, error rates or device faults before they pose a serious problem.

ClearSystems, Inc., 4925 O'Connor Rd. N, Irving, TX 75062; (972)541-1771; gen@clearsys.com; www.clearsys.com.

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New From HP

HP OpenView-Ready Program Expansion — HP announced that Silicon Graphics Inc. and Stratus Computer joined the HP OpenView-Ready Program. Both vendors will package preconfigured versions of the HP OpenView management solution with their enterprise servers. The solutions will be preconfigured with specific management knowledge to provide ease-of-use and out-of-the-box management functionality.

HP 5000 Midrange Printer — HP announced that its mid-volume production laser-printing solution for data centers, distributed networks and print on-demand applications — the HP 5000 Model D640 — now has built-in multiple original prints (MOPY), tag image file format (TIFF) and video image printing (VIP) capabilities.

The D640 printer provides a monthly print volume in excess of 90,000 pages. It provides 40 ppm simplex and duplex printing, 600 x 600 dpi resolution, multiple print languages and support for standard and custom paper sizes, with printing consumable costs as low as 1 cent per page.

HP also offers optional accessories to increase the paper capacities of the D640 printer. The 3,000-sheet stacker holds up to 3,000 sheets (standard capacity is 400 sheets), has adjustable paper guides and output jogging for job separation. Additionally, the optional high-capacity input accessory can increase the input capacity to 4,500 sheets (standard capacity is 1,500 sheets in three 500-sheet paper trays).

The HP 5000 D640 printer is priced at $15,995. Optional printer accessories are as follows: the 3,000-sheet stacker is $4,500 and the high-capacity input accessory is $3,785.

For more information, contact your local HP sales office or call (800) 533-1333.

Bluecurve, Vanstar Feature Dynameasure

Bluecurve Inc. announced that Vanstar Corp. developed a service offering called "Microsoft Windows NT Reliability and Capacity Planning" featuring Bluecurve's Dynameasure 1.5 product family. This offering is delivered through Vanstar's Enterprise Technologies Consulting Practice.

Bluecurve's Dynameasure 1.5 product family includes: Dynameasure Enterprise, a measurement tool that supports concurrent testing of multiple Windows NT services; Dynameasure for File Services, a capacity and performance measurement solution for Windows NT file services which offers over 50 tunable file tests based on file work that users typically perform; and Dynameasure for SQL, a capacity and performance measurement solution for SQL with Windows NT which offers tunable OLTP SQL tests with support for Oracle7 Server and Microsoft SQL Server.

Contact Bluecurve Inc., 2101 Webster St., Ste. 1690, Oakland, CA 94612; (510) 267-1500; sales@bluecurve.com; www.bluecurve.com.

Circle 395 on reader card

AccountMate, Synex Distribute F9

AccountMate Software Corp. announced the signing of a distribution agreement with Synex Systems Corp. With this agreement, AccountMate has the exclusive rights to distribute Synex's F9 for its LAN and client-server financial management product lines. F9 is a spreadsheet-based financial reporting application that provides users with general ledger reporting flexibility.

Contact AccountMate Software Corp., 20 Sunnyside Ave., Mill Valley, CA 94941; (415) 381-1011; info@accountmate.com; www.accountmate.com.

Circle 394 on reader card

Empress Delivers TIMESERIES

Empress announced that the Empress RDBMS user now has an added option in selecting an indexing method which best serves their need for a specific application. In addition to the B-tree indexing method, users of the Empress RDBMS can take advantage of TIMESERIES, which is ideal in applications in which key index values change dramatically over a period of time.

Contact Empress Software, 6401 Golden Triangle Dr., Greenbelt, MD 20770; (301) 220-1919; sales@empress.com; www.empress.com.

Circle 393 on reader card

Hummingbird Announces Exceed Version 6.0

Hummingbird Communications Ltd. announced Exceed Version 6.0 which features: X11R6.3/Broadway compliance; new Wizard-based X client startup with NIS integration; and Jconfig, a Java-based application management system that enables automated configuration and management of desktop applications.

Also announced was HostExplorer Version 6.0, a new release of a high-performance mainframe terminal emulation suite; and NFS Maestro Version 6.0, an NFS client for Windows 3.x-, Windows 95- and Windows NT-based PCs.

Contact Hummingbird Communications Ltd., 480 San Antonio Rd., Ste. 100, Mountain View, CA 94040; (415) 917-7300; sales@hummingbird.com; www.hummingbird.com.

Circle 392 on reader card

Heroix Enhances RoboMon

Heroix Corp. announced RoboMon Version 6.1 for UNIX. New in this release is enhanced site-specific monitoring of databases and applications. The release features an enhanced Omni-Collector, which allows RoboMon to monitor and take actions on problems based on any data that can be generated by the computer system. Version 6.1 also supports multitasking to accommodate corrective actions that may be time consuming.

RoboMon for UNIX is available with prices ranging from $300 to $2,500 per machine.

Contact Heroix Corp., 120 Wells Ave., Newton, MA 02159; (800) 229-6500; info@heroix.com; www.robomon.com.

Circle 391 on reader card

Smart Storage Announces Network Storage Suite

Smart Storage Inc. announced a suite of network storage software for Windows NT that includes its latest version of SmartCD v.2.5 for Windows NT. The suite includes SmartCD for access, SmartCD for recording, SmartCD for integrated recording and access, and SmartCD API toolkits. Administrative features include watermark-based job scheduling; online updates; statistics gathering; and CD and unlimited caching.

SmartCD for recording v.2.5 for

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Windows NT pricing begins at $450. SmartCD for access and SmartCD for integrated recording and access v.2.5 pricing begins at $500. API toolkits are priced separately and begin at $2,800.

Contact Smart Storage, 100 Burtt Rd., Andover, MA 01810; (888) 479-0100; info@smartstorage.com; www.smartstorage.com.

Circle 390 on reader card

Open Systems Expands TRAVERSE 97

Open Systems announced the availability of TRAVERSE Bank Reconciliation, a new application in the latest release of TRAVERSE 97 which was developed with the Access 97 RDBMS.

TRAVERSE 97 Bank Reconciliation streamlines day-to-day operations and eliminates errors with Void Checks and Stop Payments function. User can reverse any accounts payable payment.

Contact Open Systems Inc., 7626 Golden Triangle Dr., Eden Prairie, MN 55344; (612) 829-0011; info@osas.com; www.osas.com.

Circle 389 on reader card

Microtest Offers WebZerver

Microtest Inc. announced WebZerver, a plug-and-play intranet miniserver. Its EazyPrint feature allows material to be posted to the intranet by simply "printing" just as if the user was printing to a network-attached printer.

Additionally, it has expandable storage capabilities that let users attach a variety of storage peripherals, including external hard disks, Jaz drives, Zip drives, SyJet drives, ezflyer drives, CD-ROM drives, CD changers and DVD drives. Price is $1,595.

Contact Microtest Inc., 4747 N. 22nd S., Phoenix, AZ 85016; (602) 952-6400; info@microtest.com; www.microtest.com.

Circle 388 on reader card

Infospace Inc. Ships SpaceOLAP 1.0

Infospace Inc. shipped SpaceOLAP 1.0, a 100% Pure Java OLAP application designed for the Web and intranet. It enables companies to design and publish multidimensional data to thousands of users through a Web browser. End users view presentations of interactive 2D and 3D Java charts (SpaceCharts) and pivot tables (SpaceTable), complete with drill-down and rotational capabilities.

Pricing starts at $15,000 per server, plus $2,500 per concurrent user with a minimum of five users.

Contact Infospace Inc., 181 Second Ave., Ste. 218, San Mateo, CA 94401; (888) INFOSPACE; info@infospace.com; www.infospace-inc.com.

Circle 387 on reader card

HARDWARE

3DLabs Introduces GLINT TX Gold

3DLabs Inc. announced the GLINT TX Gold processor, which is a speed-enhanced bundle of GLINT 500TX and GLINT Delta processors, together with a new release of 3DLabs' Windows NT and OpenGL drivers.

GLINT TX Gold-based boards support 24-bit true-color, double-buffered high-resolution display with true 8-bit overlay support for applications such as Softimage 3D & I-deas; full high-precision 24-bit or 32-bit

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Contact 3DLabs, 181 Metro Dr., Ste. 520, San Jose, CA 95110; (408) 436 3455; www.3dlabs.com.

Circle 384 on reader card

IntelliTech Produces IntelliBar Printers

IntelliTech announced IntelliBar label printers, which use HP PCL for simple integration, installation and easy use; a 300 dpi print head for laser quality fonts, graphics and barcodes; and an extensive ribbon supply selection. Standard IntelliBar features let you print labels in three different modes: standard continuous printing, peel-off and tear-off.

Contact IntelliTech International Inc., 577 Main St., Hudson, MA 01749; (508) 568-0370; iii@tiac.net; www.intellibar.com.

Circle 385 on reader card

ISDN Subscriber Loop Available

Telmax Communications Corp. and ECI Telecom Inc. reached agreement by which they will cooperate in the development, manufacturing and sales of ISDN Subscriber Loop products.

These new ISDN products enable telephone companies to deliver ISDN services to a broader subscriber base at a lower cost. In addition, these products also allow telephone companies to more efficiently use their existing copper wire when provisioning multiple services to the same subscriber.

Contact Telmax Communications, 46515 Landing Pkwy., Fremont, CA 94538; (510) 440-8680; info@telmaxcom.com; www.telmaxcom.com.

Circle 382 on reader card

Oracle Selects Gen5-S XLE

MAXSTRAT announced that Oracle Corp. deployed the Gen5-S XLE storage server to provide fast and reliable data access within Oracle's Porting Automation lab. The Gen5-S XLE can store over 800GB of data in a single cabinet while occupying less than one square meter of floor space. Systems can be configured with multiple Ultra SCSI and Fibre Channel Arbitrated Loop connections that enable an aggregate data transfer rate exceeding 200MBps.

Contact MAXSTRAT, 801 Buckeye Ct., Milpitas, CA 95035; (408) 383-1600; info@maxstrat.com; www.maxstrat.com.

Circle 380 on reader card

Compaq Announces Two New Servers

Compaq Computer Corp. announced two enterprise-class servers — the Compaq ProLiant 7000 and Compaq ProLiant 6500. The ProLiant 7000 and ProLiant 6500 support up to four 200MHz Pentium Pro processors with 1MB of Level 2 cache memory; 512KB of cache memory also is supported. The servers feature integrated Wide Ultra SCSI for faster data transfer and dual 10/100Mbps autosensing NICs for high bandwidth requirements. In addition, the ProLiant 7000 and ProLiant 6500 are I20 ready.

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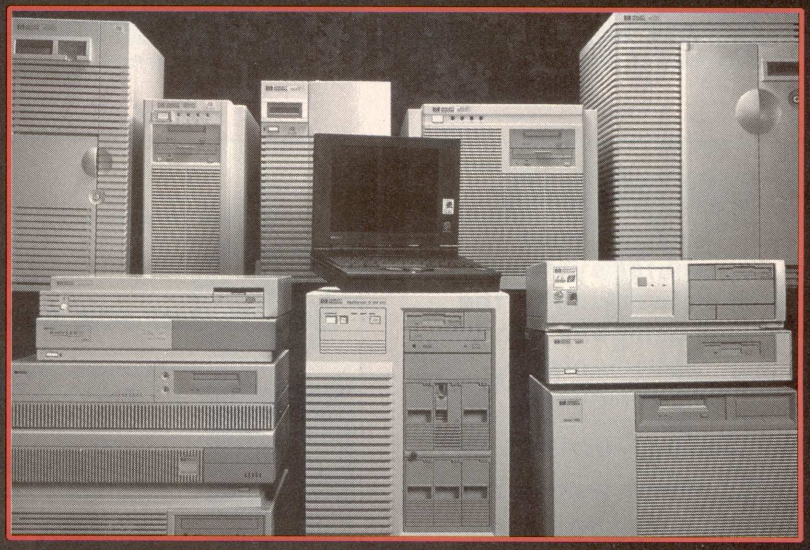

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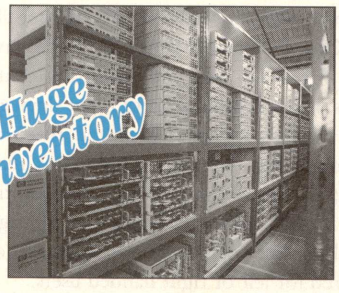

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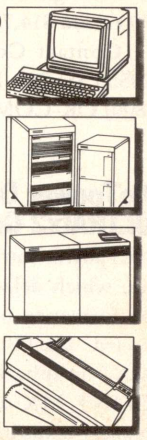

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new products

The ProLiant 7000 features expandable memory up to 4GB; 11 I/O slots, including five PCI Hot Plug slots; and up to 18 disk drives that can be configured with up to 109.2GB of internal storage. The rack-mounted ProLiant 6500 comes in a 7U (12.25 inches) form factor that enables customers to fit up to six servers into Compaq's 42U, 19-inch rack cabinet.

Pricing starts at $16,935 for the ProLiant 7000, and $14,735 for the ProLiant 6500.

Contact Compaq Computer Corp., 20555 SH 249, Houston, TX 77070; (800) OK-COMPAQ; www.compaq.com.

Circle 379 on reader card

NeTpower Delivers ULTRAfx2 Graphics

NeTpower introduced ULTRAfx2 graphics, which deliver five times the texturing performance of the previous generation board. ULTRAfx2 graphics is a "twin MX" graphics card based on 3DLab's GLINT MX technology, which delivers bilinear texturing at up to 50 million 32-bit texels per second and trilinear texturing at up to 28 million texels per second.

With up to 60MB of memory, ULTRAfx2 also supports a standard 32-bit Z buffer depth and true color display at all resolutions.

Contact NeTpower, 545 Oakmead Pkwy., Sunnyvale, CA 94086; (800) 801-0900; www.netpower.com.

Circle 378 on reader card

Hitachi Expands Skyline Series

Hitachi Data Systems (HDS) announced the 20th model of its scalable HDS Skyline Series of mainframe computers. The Skyline model 413 is a four-IP, single-sided system. It comes with support for up to 256 channels, 96 of which can be parallel and up to eight can be Inter-System Coupling Channels for connections to a Coupling Facility.

Contact HDS, 750 Centra Expwy., P.O. Box 54996, Santa Clara, CA 95056; (408) 970-1000; www.hdshq.com.

Circle 375 on reader card

Seiko Instruments Adds To Printer Line

Seiko Instruments USA Inc. (SIU) added two models to its line of one-at-a-time label printers — the Smart Label Printer 120 and SLP 220. Both printers feature auto-reverse; continuous printing; auto on; and SmartCapture, which automatically captures address from 32-bit word processors.

The printers are compatible with IBM-compatible PCs (386 or higher) running Windows 3.x, Windows 95 or Windows NT 4.0 or higher.

Contact SIU, 1130 Ringwood Ct., San Jose, CA 95131; (408) 922-5900; info@seikosmart.com; www.seikosmart.com.

Circle 377 on reader card

ITAC Systems Offers evolution MOUSE-TRAK

ITAC Systems Inc. reduced prices to $99 on its evolution MOUSE-TRAK peripheral. The evolution MOUSE-TRAK, available for PS/2- and Sun-compatible interfaces, is a precision-control input device.

Features include: elevated integrated hand support for maximum stress reduction; six large keys positioned to fall under the fingers; advanced users can reprogram the keys for single stroke; and can be configured for left or right handed users.

Contact ITAC Systems, 3113 Benton St., Garland, TX 75042; (800) 533-4822; sales@mouse-trak.com; www.mousetrak.com.

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DSL: Dweeb As A Second Language

Charlie Simpson's "Hooked on Dweebonics" editorial [February 1997] got me thinking. Because Dweeb is a nascent language born of the Cyber Age, it can never be restricted to its native speakers.

People need to communicate with each other, yet the variety of technospeech dialects makes this difficult. One common geek-speech should be taught in high school and college. Let me demonstrate:

ACRONYMISH

An article in *Redbook* proclaims that "anything with initials in the title implies gritty reality. CNN, ESPN ... ER, NYPD Blue." The common etyma of such powerful acronyms stem from Dweeb. DOS, RAM, ASCII, RISC, SCSI. Sure, government helped with acronyms such as NASA, SCUD and SNAFU, but their most famous initials have yet to become words: CIA, IRS, UFO, FOB. Once Dweeb is formally taught in school, "sin" may well refer to CNN!

MEDILEXIS

Could Dweeb be harder to grasp than this dialect? An innocuous query on how best to obtain a good, safe and fast suntan elicited a response rife with terms such as UVA and UVB rays, SPF of 15, DNA and metabolic changes. An entry in *The New England Journal of Medicine*? No — *GQ*! I'm confident that Medilexis and the non-standard Academese, Bizbabble and Legalese could be simplified within the Dweeb syntax.

MUSCLECARPHONES

Musclecarphones, like speakers of Acronymish, are predisposed to using initials. Their literature is sprinkled with such terms as DOHC, rpm, V-6, XLS, EPA and mph. They've lost touch, however, with other Anglophones as an excerpt from their holy book, *Car and Driver*, illustrates:

"First, it cast aside the Ranger pickup's antiquated swing-arm front suspension and installed in its place the unequal-length control-arm setup found on the Explorer wagon. Then the Ranger frame was boxed, which is a racer's term that means the open-channel steel beams of the frame are made into closed channels, which are more resistant to bending."

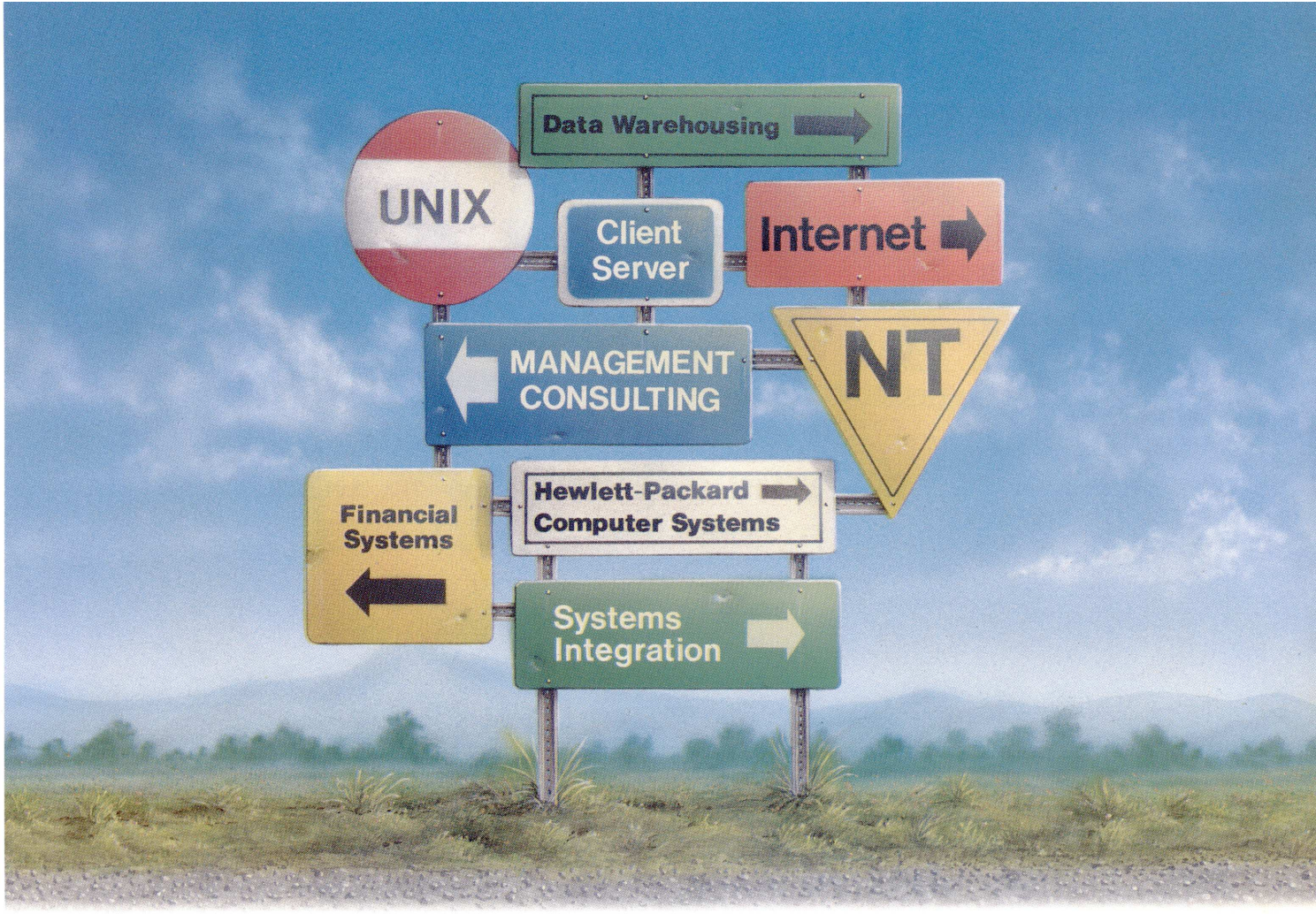
{>:-0 !?

DWEEB: THE NEW ESPERANTO

I believe there's a desperate need for a standardized idiom to become the unifying lingua franca of disparate technospeech factions. Because we're steadily incorporating Dweeb into the English language, why not make a concerted effort to learn it as a second language? While thumbing through *BusinessWeek*, I discovered an extremely powerful inducement to adopt Dweeb. In the special on the Silicon Valley — the people, the culture, the deals and the technology — it was noted that the very whisper of the right Dweeb buzzword was enough to help entrepreneurs raise $250,000 in venture capital, "open a checking account on [their] word, . . . rent buildings without showing ID."

If you wish to cut to the chase, Dweeb is a veritable ginsu knife!

— *S. Loretta Chisholm Daniel is director of Admissions & Recruitment at University College — Rutgers University in New Jersey.*



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